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HEALTH IN INDEPENDENT INDIA

HEALTH IN INDEPENDENT INDIA

A DECADE OF PROGRESS

By
G. BORKAR

Foreword by
JAWAHARLAL NEHRU
Prime Minister of India

MINISTRY OF HEALTH
GOVERNMENT OF INDIA
NEW DELHI

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Pundit Jawaharlal Nehru
Prime Minister of India

FOREWORD

I AM GLAD that this book has been prepared. I am also glad that it has been written in a popular style so as to make it more readable than normally official reports are. It is a record of the work done, not only by our Central Health Ministry, but also by the Health Ministries of our States. This is a story of creditable achievement during the past nine years or more, and I think it is desirable that our people should know something about it.

Some people imagine that health being normally considered a State subject, the Central Government has little to do with it. I hope that this book will convince them that this is not correct and that the Central Health Ministry is the pivot round which all the major schemes for improving the standards of health of the nation revolve. All major schemes have necessarily to be sponsored and encouraged by the Central Ministry.

Essentially, this work is a cooperative endeavour between the States and the Centre, and its success depends on the measure of cooperation between the two. For this purpose, the Central Council of Health was started and it was greatly helpful in bringing about this cooperative and coordinated approach.

The pursuit of health or the raising of the health standards of the nation does not mean merely the

curing of disease, but much more so the prevention of it. Thus, while hospitals and the like are necessary, what counts most is the public health approach as well as health education. Health today does not consist merely in the avoidance of bodily ailments, but comprises in its scope the health of the mind, which has a direct effect on the body, just as bodily ill-health often affects the mind.

I am sure that the very first consideration in raising the standards of health of the nation is to supply adequate food, properly balanced. Poverty and health do not go together. Therefore, it is really more important for the health of the individual as well as of the community, that there should be adequate nutrition. To this, I should like to add that food habits should be encouraged which would ensure a balanced diet. Unfortunately, we in India suffer most of all from inadequate nutrition, and even those who can afford to have what food they like, have seldom a balanced diet. Then, there is the necessity of a pure water supply, which is still lacking in a great part of our rural areas, though some progress has been made.

A war on disease and ill-health is, therefore, essentially a war on poverty and all its evil brood. In effect, it is the raising of the standards of the nation in every way, and we come back to our Five Year Plans whose aim it is to do this.

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But, while this is being done, some special attention has necessarily to be paid to the curative aspect as well as to the elimination of various painful diseases which affect large numbers of our people and either kill them or disable them. Malaria, I suppose, is the biggest scourge of all. Then, there is tuberculosis, venereal diseases, leprosy, etc. This book will indicate the progress made in this general attack on these diseases and the grand strategy that has been employed in this campaign.

While our cities and towns require to be looked after much better than they are at present, it is really the village that has been terribly neglected and cries loudly for succour. Public health must, therefore, go to the village, and the village should not be compelled to come to the town in search of it. Our community development movement will, I am sure, play a very important part in this extension of public health services to our rural areas. I think that mobile vans should be increasingly used for this purpose in our rural areas.

I have no doubt that we should aim at a national health service which would supply free treatment and advice to all those who require it. But, that is still a distant prospect, though we should keep it in view and endeavour to approach that objective.

One very important subject which affects the future of our country, is that of population and the

control of population by family planning. I believe that our Government is one of the very few governments in the world which have undertaken family planning in a scientific way. The progress made thus far may not be great, but it is commendable, and a basis for this has been laid. I remember that, three years ago when I visited China, there was no talk of family planning there. When I enquired about it, I was told that people there were not interested in it. Last year, however, a request came to us from China for information about our family planning schemes, and since then, I am told that the Government of the People's Republic of China has started some kind of a campaign for population control. I do not know of any other country where the Government has taken this up seriously, although private organisations work to that end. For us in India, it is of the utmost importance for the future of our country and our people that we should make this movement for population control by family planning, a widespread and successful one.

There is much controversy often about the place of the Ayurvedic and Yunani systems. There can be no doubt that both these ancient systems of India have an honourable history and that they had a great reputation. Most people know also that even now they have some very effective remedies. It would be wrong and absurd for us to ignore this accumulation of past knowledge and experience. We

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should profit by them and not consider them as something outside the scope of modern knowledge. They are parts of modern knowledge. But, in many directions, modern science, as applied to both medicine and surgery, has made wonderful discoveries and, because of this, health standards in advanced countries have improved tremendously. We cannot expect to improve our standards unless we take full advantage of science and modern scientific methods. There is no reason why we should not bring about an alliance of old experience and knowledge, as exemplified in the Ayurvedic and Yunani systems, with the new knowledge that modern science has given us. It is necessary, however, that every approach to this problem should be made on the basis of the scientific method, and persons who are Ayurvedic and Yunani physicians should have also a full knowledge of modern methods. This means that there should be a basic training in scientific methods for all, including those who wish to practise Ayurvedic or Yunani systems. Having got that basic training, a person may practise either of these systems or homeopathy.

The question is thus not of a conflict between various systems but of sound education in knowledge as it is today and then the freedom to apply it according to any system. It is the scientific approach that is important.

I hope that this book will not only bring to many people knowledge of the considerable progress that

has been made in India during the past nine years in this fight against disease and the struggle for higher standards of health, but will also draw attention to the broad strategy of this approach. We have to deal with a vast country and a great population, and we have to pay particular attention to the preventive aspects so that our people may have healthy bodies and minds and may be able to devote themselves to worthy purposes.

These nine and a half years since Independence have been vital years for us, the change-over from foreign rule to self-rule, the adaptation of the old order to the new order, the many new problems that faced us and the approach to these problems from the point of view of the interest of the masses of the country, the growth of planning and our Five Year Plans, the special attention to industry and agriculture, the question of unemployment, and the basic question of our fight against poverty and of changing a static and stagnant economy and making it dynamic and self-reliant. In this great and many sided struggle, the question of the health of the nation has been necessarily of importance. During these years, Rajkumari Amrit Kaur has been our Health Minister in the Centre. It has fallen to her lot to undertake this great task, and I should like to pay my tribute to her for the worthy manner in which she has discharged it and thus laid the

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foundations for future progress. Strong and stable foundations have been laid. We have now to build upon them.

Jawaharlal Nehru

NEW DELHI;
3rd May, 1957.



Rajkumari Amrit Kaur
Minister for Health 1947-57

Introduction

IN MOST FIELDS of human endeavour the quick progress which follows action is easily discernible. But in the domain of health immediate results are seldom spectacular. Intangible and hardly apparent at first, the complete picture only emerges after some length of time, sometimes running into decades. Added medical facilities, improved therapeutic and surgical techniques, large scale programmes for the control of communicable diseases and all health schemes that border on social services, do yield rich dividends in the long run but the material benefit to the people can hardly be assessed in full within a very short span of time. All beneficial measures which collectively go to improve the health of the nation can, therefore, only show results with the passing of time. It is not like dropping a penny in the slot and getting something immediately out of the machine. It really means the projecting of short term as well as long term measures for the eradication of many of the causes leading to ill-health and disease. It means a relentless effort in the pursuit of this objective. It means the provision of medical facilities and the ensuring of healthy living conditions to every citizen irrespective of social or economic status, of race, caste, creed or regional affiliation.

Observation and statistical analysis have, however, shown unmistakable trends of improvement in the health and well-being of the people. The expectation of life in India is increasing and the death rate is steadily going

down. More mothers and children are surviving childbirth. People are becoming less and less disease-prone as the standards of nutrition and environmental hygiene are improving. The results may not appear spectacular but they are there all the same.

Disease knows no barriers. Likewise, measures against it can have no barriers, international or provincial. Health measures must, therefore, be all embracing and cover every part of India. Health in India is a State subject and the Union Government has mainly an advisory and coordinating function to discharge. The Central Ministry of Health, in the pursuit of its objective health for all, has had to initiate countrywide programmes and to co-ordinate the activities of the various participating States and to see that no State lags behind for lack of Central aid, whether in the matter of material or human resources or of technical know-how. In doing this, the Centre has not arrogated to itself any powers of overall control but has maintained the co-ordinative and advisory function through the Central Council of Health.

In the meetings of this body, in which the Centre and all States participate, there is a pooling of ideas, a pooling of knowledge and a pooling of experience which together contribute to the success of national health programmes. Some of these programmes are too vast for any individual State to carry out in their entirety, even within their regional boundaries. They require Central assistance which has been readily forthcoming within the framework of the Planning Commission's recommendations and available resources. We have, however, taken care to see that this does not lead to any over-lapping but will help the individual States to complete their own part of the common task. The various national schemes for the

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control of Malaria, Filaria, Tuberculosis, Leprosy, Venereal Disease and other communicable diseases involve an expenditure of crores of rupees. They require for their execution trained technicians whose numbers run into tens of thousands. Such schemes could hardly succeed unless the Central agency, which processes each individual phase of the programme, also acts as a Central clearing house for ideas and co-ordinates activity. This function the Central Ministry of Health has been fulfilling for the last nine and a half years, ever since India attained Independence.

There are also certain other activities in which the Union Health Ministry exercises direction, as in the case of the management of Central Institutions like the All-India Institute of Hygiene & Public Health and the All-India Institute of Medical Sciences and others. It shoulders the responsibility of making the capital city of India a model one by ensuring a co-ordinated development programme, the eradication of slums and the rehousing of the population and looking after medical facilities and health programmes in the capital city and the State of Delhi. Local Self Government and the Panchayat systems are also Centrally co-ordinated subjects.

During the nine and a half years in which I have been in charge of the Health Portfolio in the Union Government, I have had to come to grips with both major and minor problems affecting health and medical relief measures in India. The first important task which we set out to accomplish was to make medical relief more broad-based; secondly, to widen the scope of health measures; and thirdly, to initiate large scale operations for the control of communicable diseases. It was fortunate that in the Report of the "Health Survey and Development

Committee", we had the advantage of a critical assessment of India's requirements in these fields and the limits to which these requirements should be met within the existing and potential resources of this country. Many of the recommendations of the Bhore Committee have not only been adopted but we have gone far beyond the scope of the original suggestions. The number of medical institutions, like dispensaries and hospitals, have been increased from 9,131 in 1949 to 9,816 in 1954 and Hospital beds from 1,08,637 to 1,36,843 during the same period. The number of training institutions for nurses has increased from 129 in 1948 to 206 in 1955. The number of nurses that qualified in 1948 was 683 but in 1955 it was 1,664. There was a similar increase in the number of midwives and health visitors. To augment teaching facilities, 16 more medical colleges have been opened during this period bringing the total to 46 teaching institutions which have almost doubled the number of admissions to colleges, thus automatically increasing the number of qualified doctors to the same extent. On the public health side till the end of the financial year 1955-56 help to the tune of over Rs. 1,100 crores has been given to the States in the form of grants-in-aid and loans for improving urban and rural sanitation and water supply systems. Large scale programmes are under way for the control of endemic and epidemic communicable diseases whose incidence is steadily being brought down. The results have been promising enough in the case of Malaria to switch on to an eradication programme. The control of Tuberculosis is a long drawn out measure and, if results from other countries are to be relied upon, it is bound in a period of a couple of decades to bring down the mortality and morbidity rates in Tuberculosis to about a fifth of the present figure. A programme of health education has been initiated to ensure that disease does not make any

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inroads in national health through the ignorance of its causes, course and methods of prevention. We have encouraged both Government and private production of vaccines, sera and anti-biotics, of insecticides and of chemotherapeutic agents, so that in the foreseeable future India can attain self-sufficiency in these. The reduction of the death rate and the increase in the number of live births and a slightly higher fertility index are likely to cause a rapid rise in the population of India. Consequently, a greater pressure will in time be exerted on the resources of this country. This factor has not been lost sight of and India is the first country in the world to have projected family planning on a national basis as a State measure for the public weal. The success of some of the pilot schemes now in progress definitely indicate that we have not been too optimistic in our expectation. Simultaneously, with an incursion into the family planning sphere, better nutritional standards are being evolved on a scientific basis so that the Indian diet, varied as it is from region to region, can be brought up to the optimum standard suited to India's climate, resources and palate.

In Delhi State, where the Health Ministry has a considerable responsibility to discharge, advances have been recorded in the matter of slum clearance, the provision of adequate sanitation and water supply and of other civic amenities. A plan for greater Delhi is on the anvil and in its final emergence promises to make of Delhi, the capital city of India, a metropolis worthy of our country. A statutory body, patterned after the Bombay Municipal Corporation and adapted to local requirements, will be vested with authority to look after the city's civic administration.

A report on the achievements of the Ministry of Health in the post-Independence period must contain all this and a little more. Let me explain what that "little more" means. The Ministry of Health follows a certain policy in common with the rest of the Government. This policy itself is the tangible expression of the ideology on the basis of which the Government has been voted to power. How this ideology has been interpreted in the field of public health and medical relief and how the resultant policy has been translated into action is described in the book which goes on to assess the results achieved.

It is the usual practice for the officials of a Ministry to present a picture of its working to the public in the form of a report. As a result, it really becomes a disjointed narration with a number of dissimilar items strung together. We wanted a factual presentation by an open mind unconcerned with policy or its execution in any one part of the manifold tasks that this Ministry performs. A writer from outside the Ministry was, therefore, engaged to present a correct appreciation of the achievements of this Ministry in the last nine years in the different spheres of its working. He was allowed to refer to any files, call for any information and refer to any documents which he felt would give him a correct idea. As a result, the book is certainly not of the usual type of reports, even though it is entirely based on actual facts and figures, collected from published and unpublished documents and from the working files of this Ministry. Apart from presenting facts, it reads between the lines and correlates with them the motivating force, the ideology and policy enunciated by the Prime Minister, that of establishing a Welfare State and a Socialistic Pattern of Society. These were the key-notes on which the Ministry has worked and these are the key-notes which form the theme of the book.

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The presentation is also unusual. Some of it almost reads like a war book. Perhaps this was inevitable. We really are fighting a total war against man's common enemies of disease and ill-health, caused by various factors. Many of these diseases, which were once considered uncontrollable, are not only being controlled, but are on the way to being completely eradicated.

If the author has drawn on the past or the pre-Independence era and compared its achievements to those under Independence, it has only served to spotlight the fruits of Independence which are many. Today we can boast of more hospitals, more beds, more dispensaries, more doctors, more nurses and other ancillary medical personnel, and of plans for family planning and wider health education. In fact, all that makes for wholesome and healthy living that exists in the India of today, or is projected for the future, can be attributed to the one magic word—Independence—where one is master in one's own house, to run it as one likes. That, within the resources provided to us, is what we have endeavoured to do to the best of our ability. How all that has been achieved and how it is going to be extended in the years to come is explained in this book on the achievements of the Ministry of Health in the past nine years and a half.

Amrit Kaur.

NEW DELHI;
18th March, 1957.

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REPORTS are usually written on the work or activities of a Ministry, seldom on their achievements. I was, therefore, agreeably surprised when I was asked if I could undertake the task of writing on the achievements of the Ministry of Health during the post-Independence period. This meant that the authorities, not only wanted me to write on the activities of the Ministry, but also to assess and evaluate the results achieved. Such a task is in itself difficult but in this particular case it was rendered more difficult by the fact that the subject of Health does not lend itself to a proper evaluation of the results within the short period of a decade. I was, however, heartened by the thought that even if such results are not too obvious, they do tend to show definite trends for the future and these trends show even more clearly in their historical perspective.

I started with an open mind, unhampered by any preconceived notions about any particular aspect of the Ministry's many activities. I collected data and all relevant statistical and other information about the many and varied aspects of the Ministry's work and tried to assess what effect each individual programme had on the general health picture of the country and on social and political economy and what trends emerged in respect of the future.

The first and most important thing was to find out what made the clock tick. How were the policies to be evolved on which the executive could base action? What

was the basic ideological background against which one could see the developing policy line? Comparing the record of the Government in the field of health before and after 1947, one cannot escape the conclusion that the whole concept in respect of health matters had changed as a result of Independence. In the pre-1947 era, the common man was more or less in the position of a supplicant who could only hope to get from a benign authority some largesse in the shape of minimal medical relief and health facilities. There was no question of right, let alone of privilege. Either a man could afford private medical aid or he could not, and if he did not have the means, he had to rely on public institutions, overcrowded and distant from his home as they were, or else just lump it. There was no *via-media*.

In the post-1947 period, there was a distinct departure from this concept. Formerly the country was ruled by an alien government which was more concerned with the keeping of law and order and the defence of the empire, rather than with the establishment and maintenance of high standards of health and education in this country. It could, therefore, hardly be expected to incur unproductive (!) expenditure on such items in the immediate sense of the term. If things have changed now, they have undoubtedly changed for the better. We, in India, can certainly claim to have made available to the public more and wider-spread medical relief facilities. Health measures are no longer confined mainly to urban areas; they radiate out into rural surroundings. Preventive medicine, health education activities and other analogous programmes are largely supplementing purely therapeutic measures and curative medicine.

All this is to the good, but what of the tangible results? Are there any? The information at my disposal showed

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that, while in most health activities there has been a noticeable stepping up, the results are still wrapped up in the indistinct mistiness of the future. There is no 'ultima thule' in medical sciences and health measures. As we go further afield, new horizons open up. We can, therefore, only judge results by a process of comparative analysis. In respect of a brief period of a decade, it is hardly possible to talk of spectacular results. The blurred outlines of the picture can only be brought into sharp focus by the definitive trends that are discernible at present. Malaria incidence, for instance, has dropped to a quarter of what it was prior to 1947, and the success of malaria control operations has opened up the way to an eradication programme. Maternal mortality has dropped, and so has infant mortality. The expectation of life is longer. Nutritional standards are steadily going up, however slowly they may do so. There have been essays, on a national basis, into important socio-economic fields like population control and family planning. These and many other schemes are materially altering the health picture of the country.

The book is divided into five parts. The first one which is entitled "Autre Temps Autre Moeurs" comprises of chapters dealing with the basic ideology and the policy function of the Central Government and with actual state of medical relief and health protection measures existing in the pre-Independence period. The second part of the book is entitled the "Grand Strategy" as employed in what I visualise as a total war waged by the Government against ill-health and disease and to make adequate medical and health protection facilities available to all people at all levels. In fact, it deals largely with the two Five Year Plans. The third part of the book deals

with the major control operations dealing with what have been termed the scourges of mankind, Malaria, Filaria, Tuberculosis, Venereal Diseases, Leprosy, etc. The fourth part deals with the other activities of the Health Ministry which go to complete the picture. The individual chapters deal *inter alia* with such aspects of the Ministry's work as Port Health Organisation, Maternal and Child Health, Nursing, Health Education, Nutrition and Family Planning. A chapter is devoted entirely to indigenous systems of medicine and to the attempt currently being made to put them on a scientific footing.

The fifth part entitled "The Ministry and the Metropolis" describes the Ministry's role in the civic affairs of the Capital City and its suburbs. The three chapters deal with their water supply and sanitation, regulated expansion and slum clearance problems.

In a book for which data had to be collected, sifted and interpreted, the material scrutinised and then written up in its final form, a period of three or four months is much too short. Yet that was all that was available and I had perforce to make the best of it. If the book exhibits some lacunae, they were really unavoidable and I hope that the reader will readily forgive me for any shortcomings. Perhaps more time would have enabled me to do greater justice to so important an activity of the Government.

In this book I have tried to be as objective as possible. I have imported no personal bias either in the presentation of the facts and figures or in the conclusions which can be drawn from them; nor have I written it from the usual angle from which all governmental acti-

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vity is presented in reports. I have not felt impelled to view results from the narrow standpoint of the volume or the rate of spending or with the number of men employed in carrying out such activity. In the evaluation of results my first consideration was to ask myself the question "What is the benefit that the public derives from any and all of the measures taken in hand by the Government?" To my mind, the answer to that, is the acid test of any public policy in a democratic regime and that tests has been applied by me in assessing the sum total of the effects of the measures taken by the Government of India in the pursuit of their ideal—health and happiness for all.

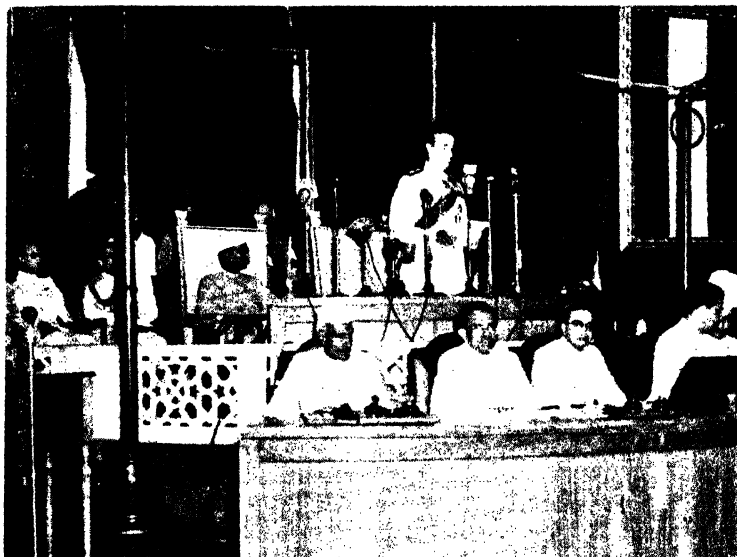
G. Borkar.

NEW DELHI;
3rd March, 1957.

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Eve of Independence -- August 14, 1947. Lord Mountbatten, the last Viceroy and British Governor General of India, addressing the midnight session of the Constituent Assembly. Dr. Rajendra Prasad, the President of the Assembly and now the President of India is on his right.

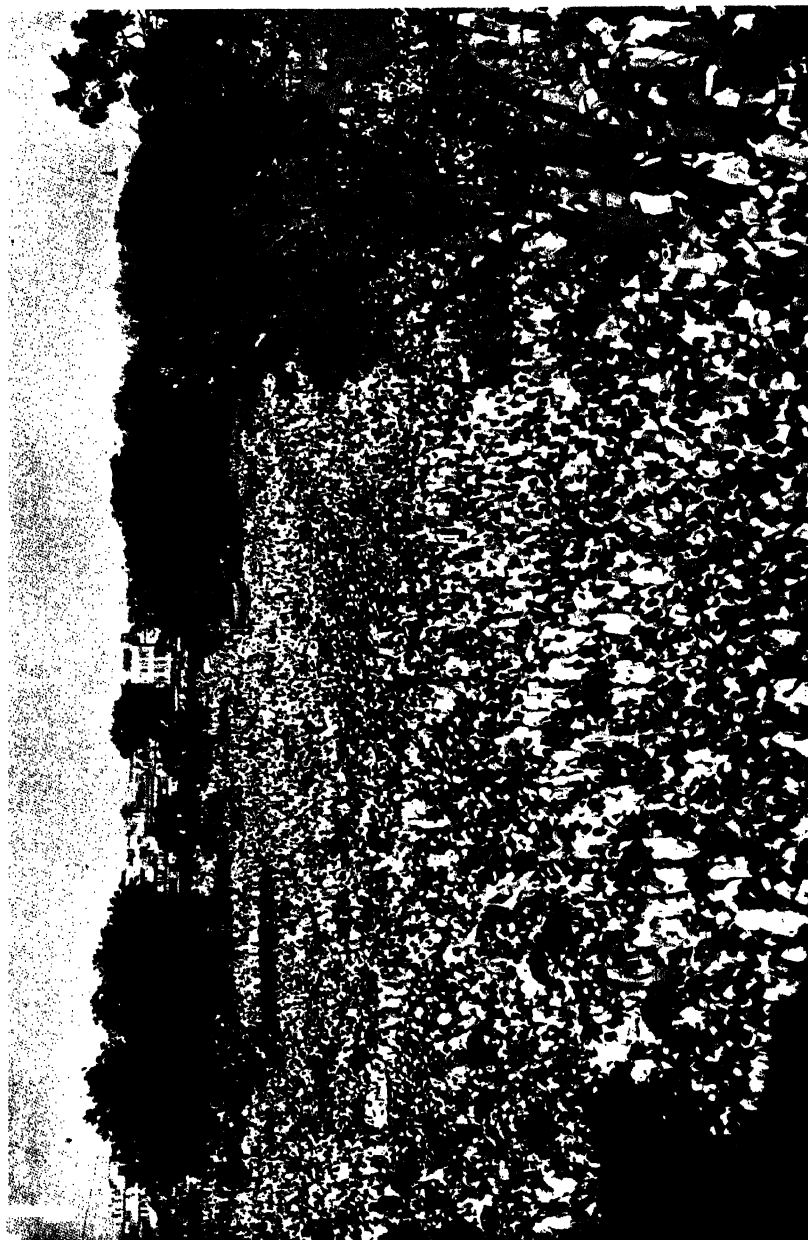
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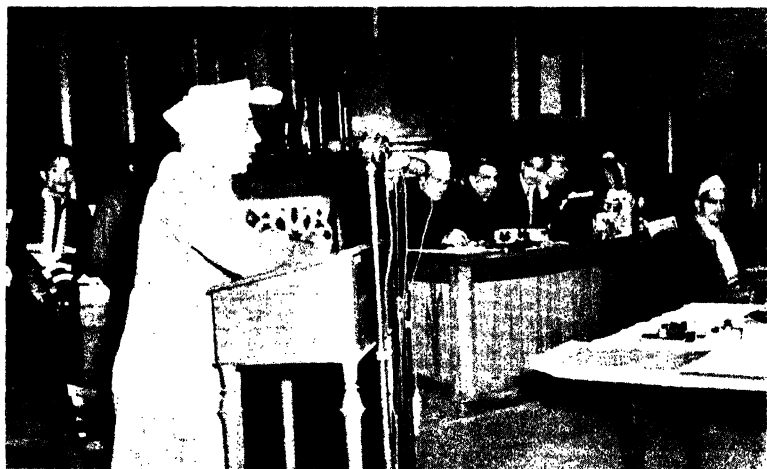
Pandit Jawaharlal Nehru, Prime Minister of India at the hoisting ceremony of Independent India's flag at the Red Fort, Delhi on August 15, 1947.

(Facing above)

The vast multitude watching the flag hoisting ceremony.







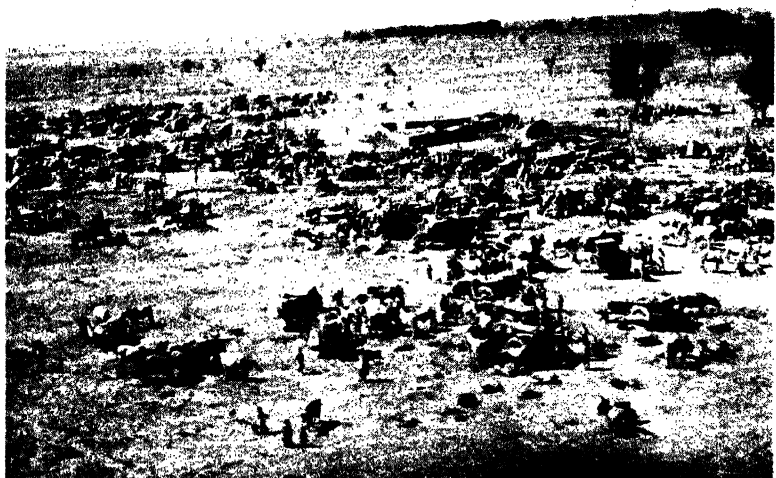
The new Constitution of the Republic of India was signed by the Members of the Constituent Assembly at its final session held on January 21, 1950. Picture shows Pundit Jawaharlal Nehru speaking on the occasion.



The aftermath of the Partition. A convoy of evacuees from West Punjab migrating to India.



(Above) A refugee special train at Ambala station. The carriages are full and the refugees have to seek room on top and (Below) A convoy of refugees from West Punjab on its way to East Punjab near Montgomery (September 1947).





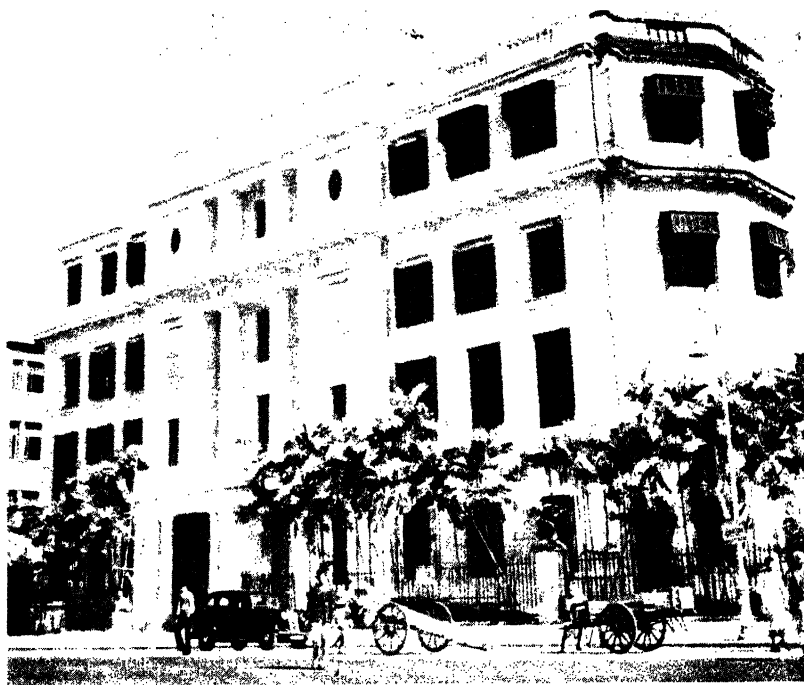
(Above) A refugee tented camp and (Below) Medical attendance at the Diwan Hall Refugee Camp, Delhi.





(Above) Medical attendance at the Wavell Canteen Refugee Camp, Delhi and (Below) A small dispensary at the Rehabilitation Colony, Nilokheri.



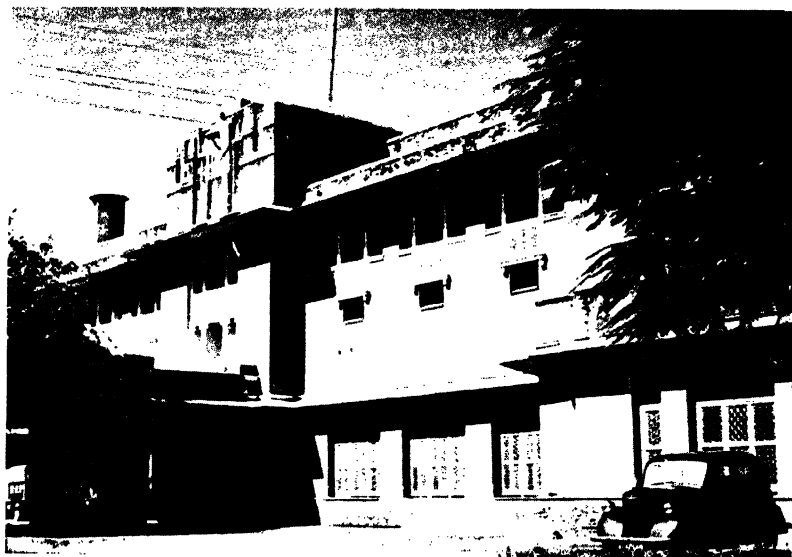


(Above) The School of Tropical Medicine, Calcutta - An exterior view of the school which has developed from a series of unit laboratories into a full fledged organisation with twelve departments of research and (Below) A front view of the Health Centre at Najafgarh, New Delhi.



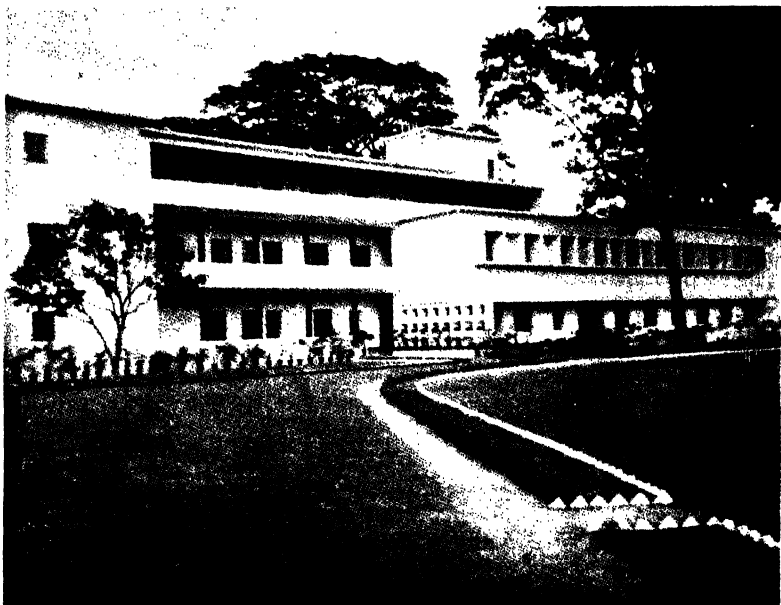


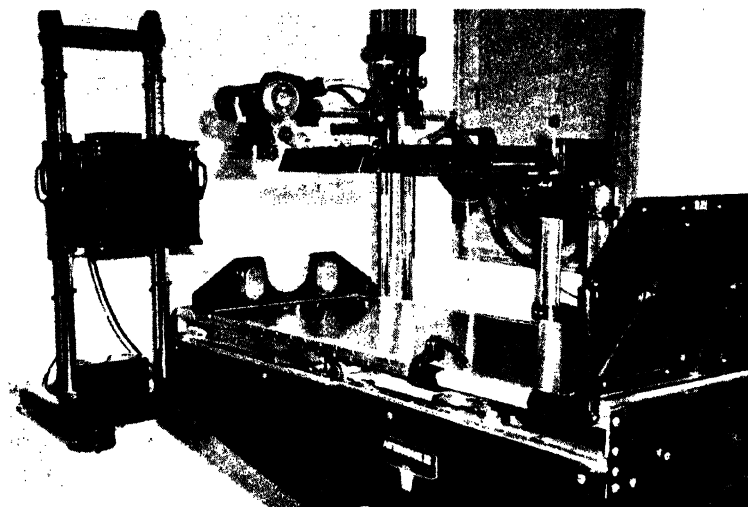
(Above) Research worker and laboratory assistant at work in the Department of Helminthology and Filariasis Research and (Below) A view of the Lady Hardinge Medical College for Women, Delhi.



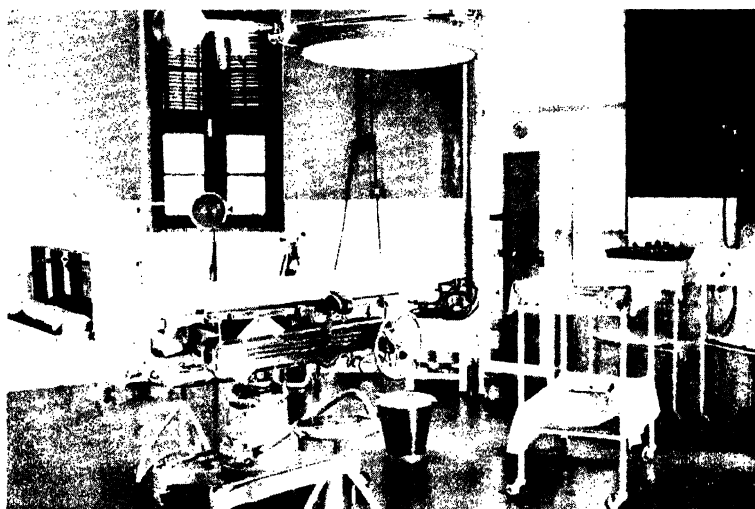


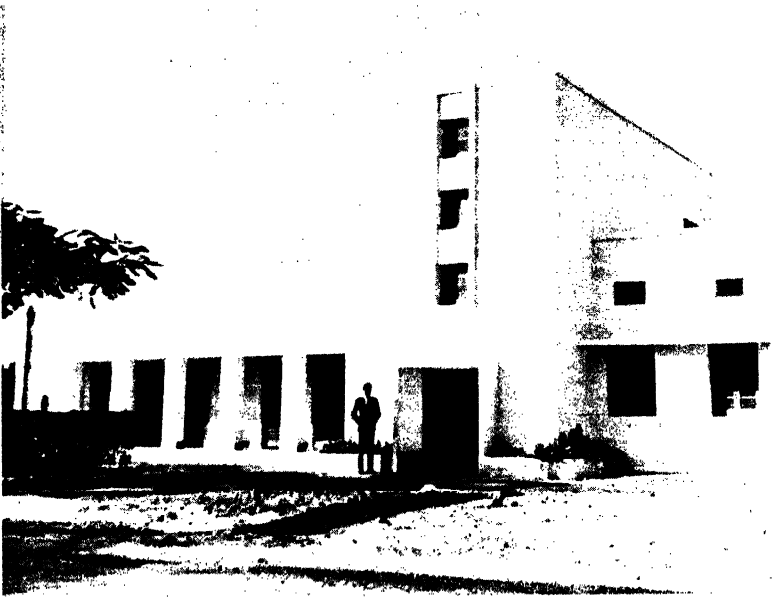
(Above) The Kamala Nehru Memorial Hospital, Allahabad and
(Below) Urban Health Centre at Chetla, near Calcutta.



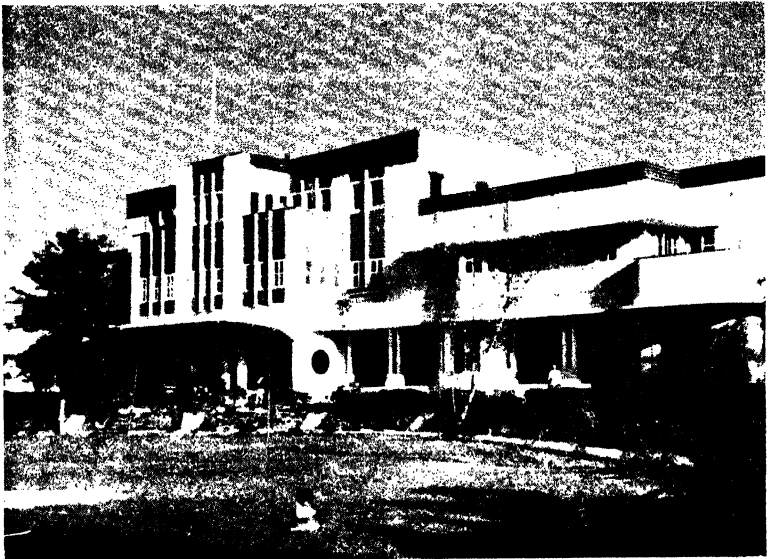


(Above) An X-Ray apparatus presented by U.K. under the Colombo Plan installed at the Vallabhbhai Patel Chest Institute, New Delhi, and *(Below)* A fully equipped operation theatre. These are typical of the standard equipment in hospitals and health centres.





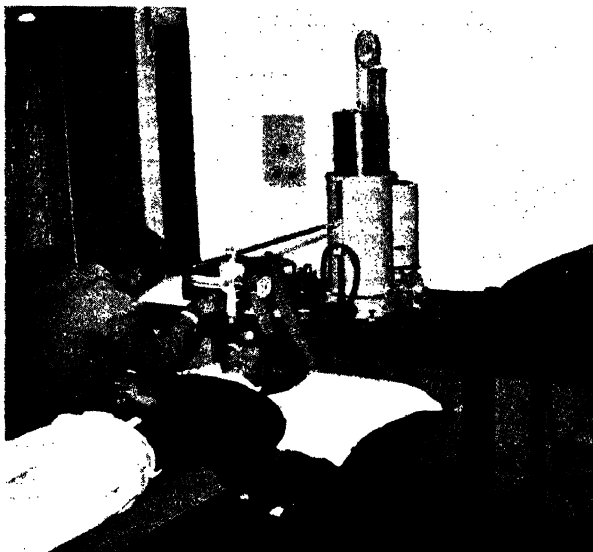
(Above) The new ward at the Infectious Diseases Hospital, Kingsway, Delhi, and (Below) The main building of the Institute of Ophthalmology and the Gandhi Eye Hospital, Aligarh where work is being done on the Trachoma Pilot Project.



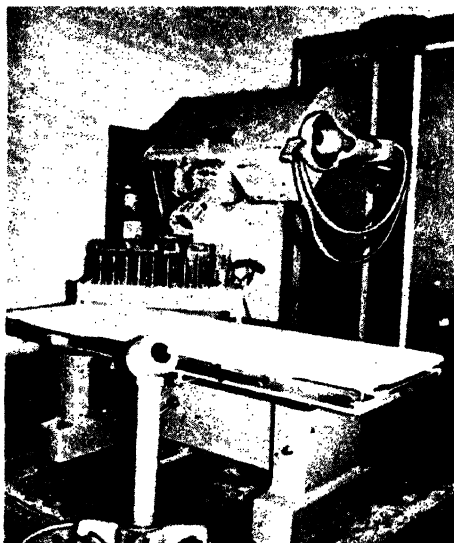


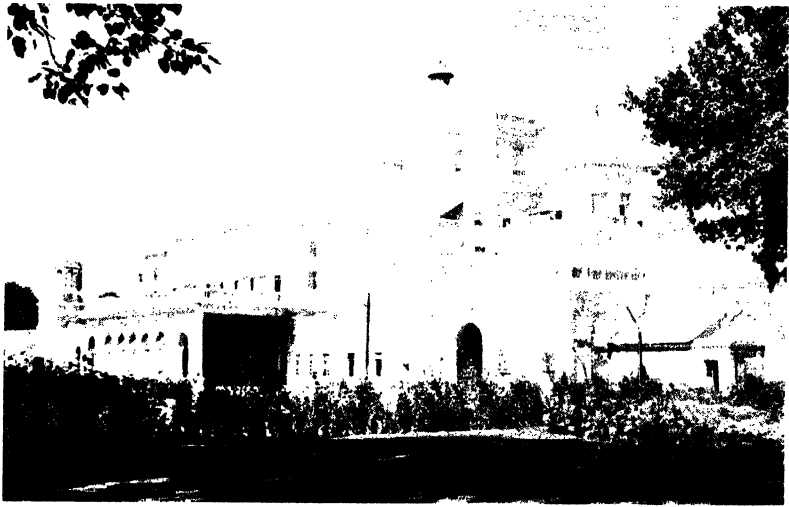
(Above) The Pasteur Institute, Southern India—Pioneers in the manufacture of anti-rabic vaccine, and *(Below)* Specially protected research workers preparing anti snake bite vaccine from the venom of poisonous snakes inside the Hallkine Institute, Bombay.





(Above) Spirometer apparatus at the Vallabhbhai Patel Chest Institute, Delhi, and *(Below)* The Radio Therapy room at the Cancer Institute, Madras.





(Above) The Central Drug Research Institute, Lucknow, and
(Below) The Sidhnath Ward of the Silver Jubilee T.B. Hospital,



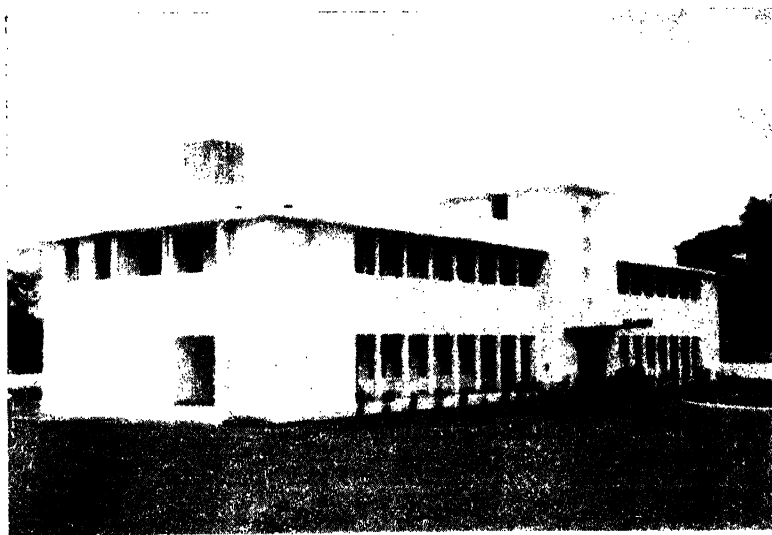


(Above) Dr. Rajendra Prasad, President of India, inaugurating the 14th International Tuberculosis Conference in New Delhi on January 7, 1957 and *(Below)* a view of the gathering.

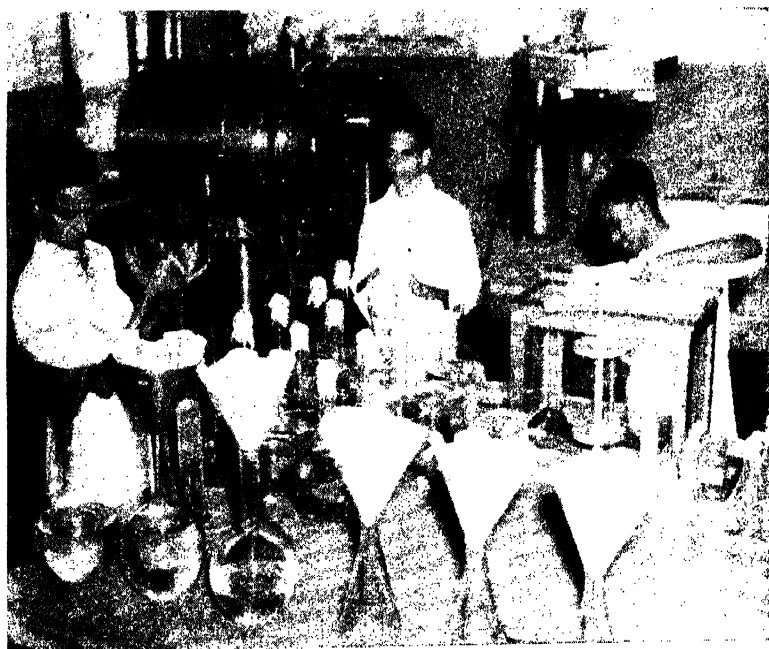




A mobile Chest X-Ray Unit of the All India Institute of Hygiene and Public Health, Calcutta. Large scale contributions by the Rockefeller Foundation made it possible for India to establish the All-India Institute of Hygiene and Public Health, the foremost institution of its kind in this part of the world. The Foundation has also contributed largely to the development of the virus Research Institute, Poona.



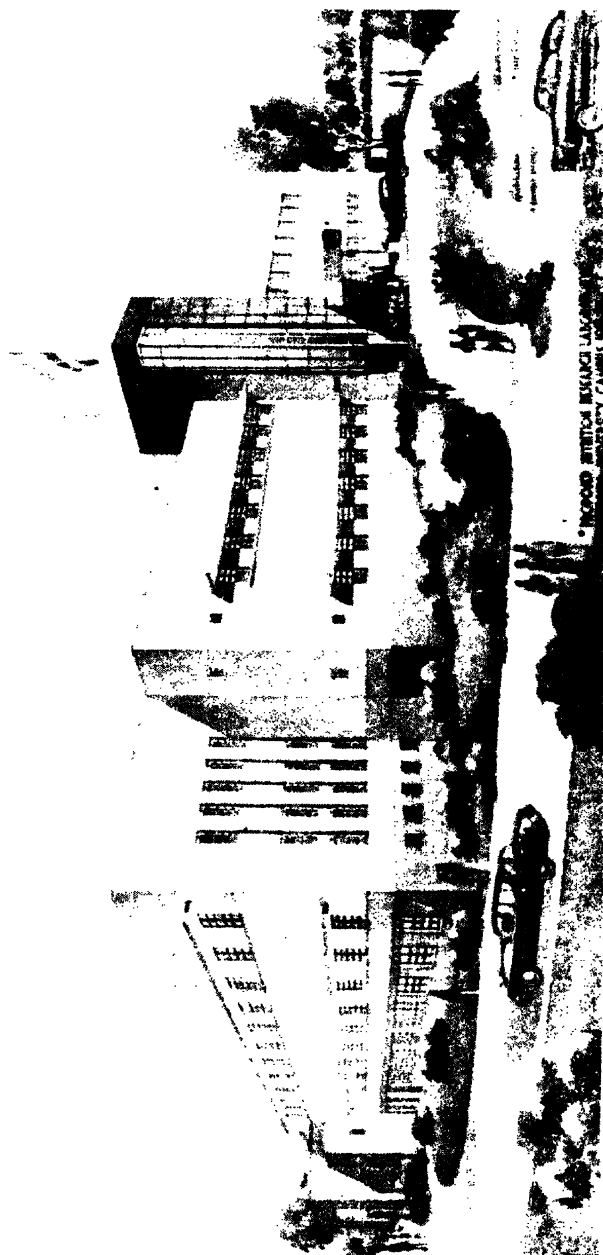
(Above) The B.C.C. Laboratory, Coimbatore, Madras and *(Below)* Media and solution under preparation at the B.C.C. Laboratory.



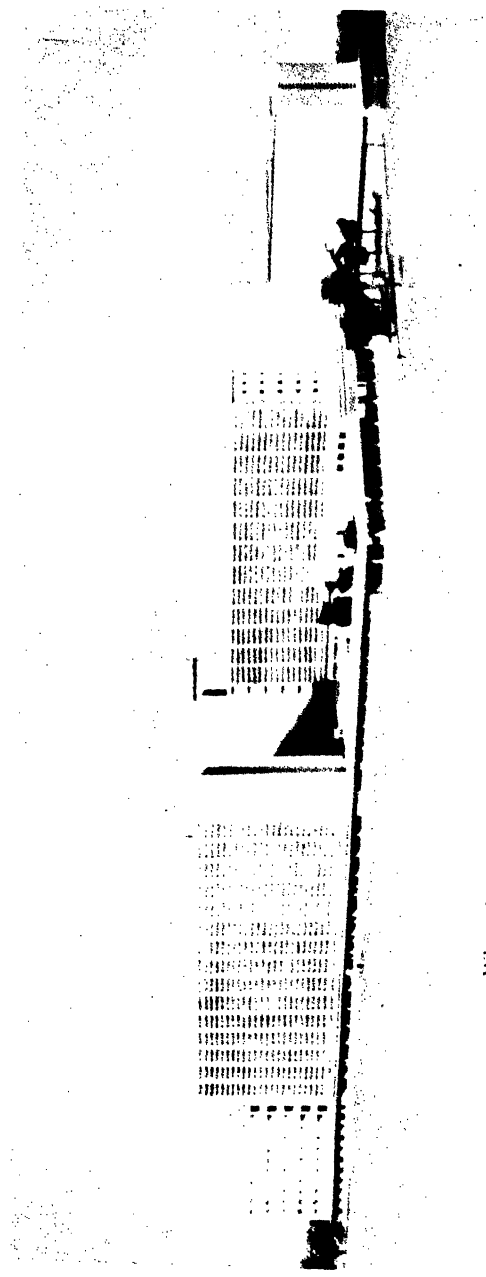


Above: A simple out-patient clinic with great potentialities in Leprosy Control and *Below:* Doctor attending patients in the out-patient clinic of the Leprosy Department of the School of Tropical Medicine, Calcutta

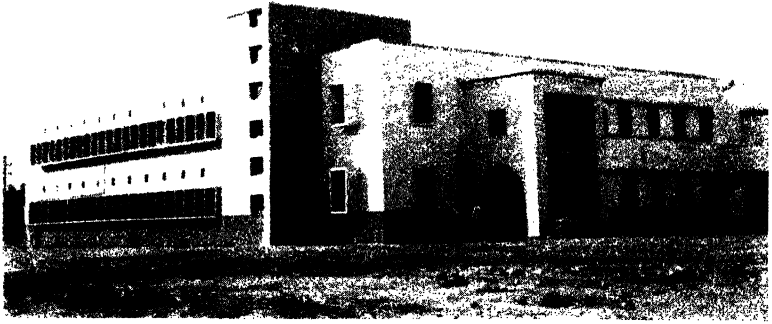




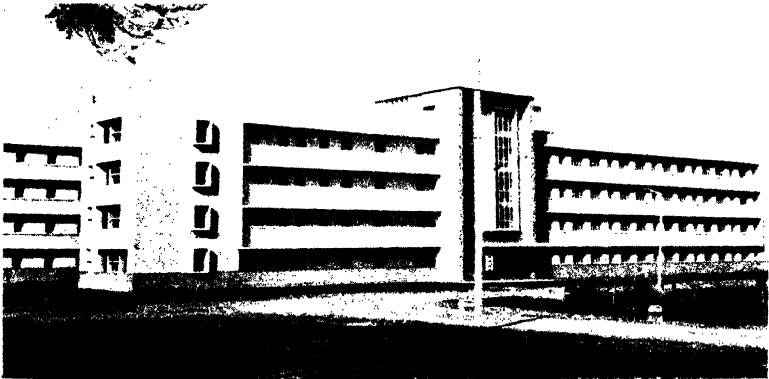
The proposed new building for the Nutrition Research Laboratory
to be located at Hyderabad.

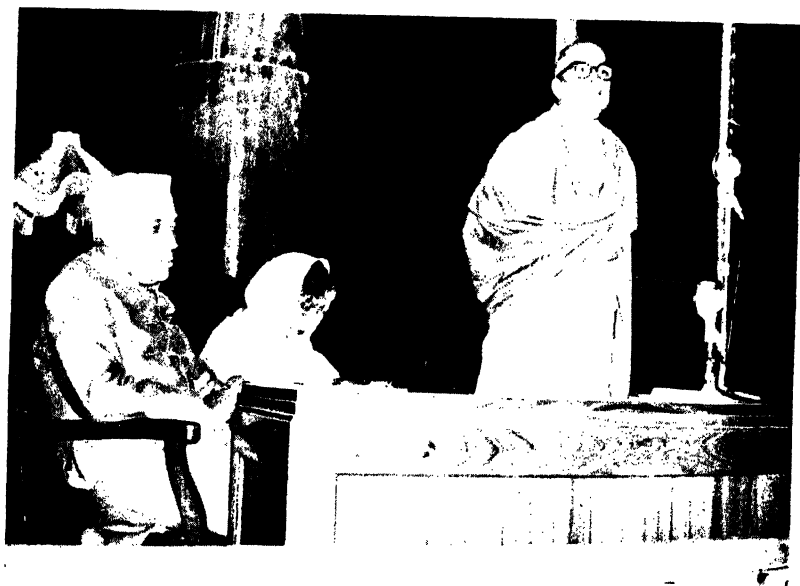


What the main block of the All-India Institute of Medical Sciences will look like when completed.



(Above) The new building of the Nursing College, Delhi, located in the campus of the All India Institute of Medical Sciences and
(Below) The Nurses' Hostel on the campus.





Dr. B. C. Roy one of India's most eminent physicians and Chief Minister of West Bengal inaugurating the Conference on Under-Graduate Medical Education in New Delhi. On his right are the Prime Minister, Shri Jawaharlal Nehru and the Union Health Minister, Rajkumari Amrit Kaur.

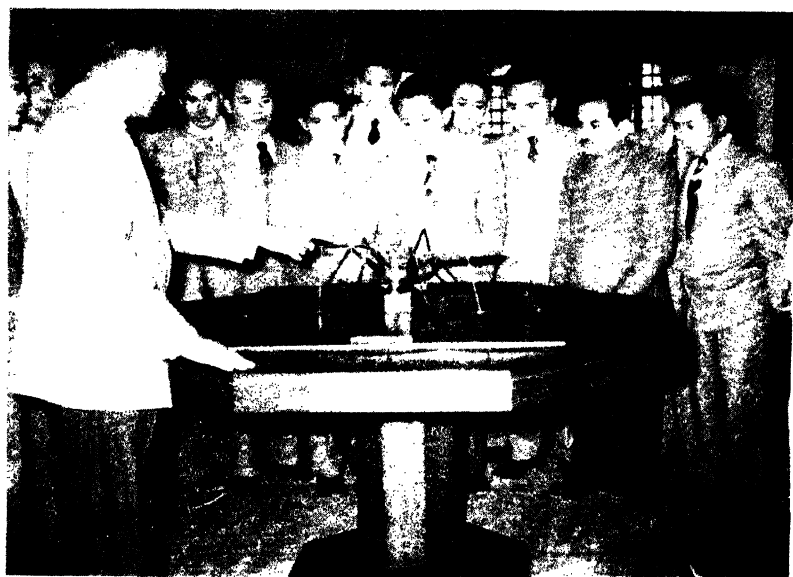


(Above) Field staff inspecting water collected from pools for mosquito larvae and *(Below)* Malaria worker spraying a village hut with D.D.T.





(Above) Doctor examining a child for enlarged spleen in a malarious area and (Below) Director, Malaria Institute of India, lecturing to a batch of foreign and Indian trainees on mosquito control





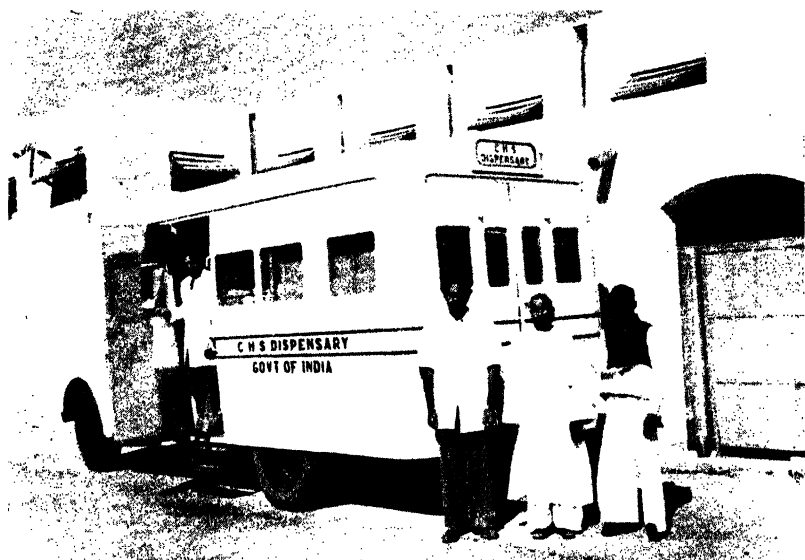
(Above) Children's Block, Sardarjang Hospital and *(Below)* A playroom for convalescent children in the Paediatric Block of the Sardarjang Hospital, New Delhi





(Above) Patients awaiting their turn at the C.H.S. Dispensary located at the Willingdon Hospital, New Delhi and (Below) A Government employee being attended to by a C.H.S. Dental Surgeon.





Above: A mobile dispensary van in operation in New Delhi under the Contributory Health Service Scheme and *Below:* A WHO V.D. Team at a rural hospital at Mashobra in the Simla Hills. Team leader taking blood samples from hill folk.





Above: A bird's eye view of a shum area and *Below:* A well laid out colony to house evacuees from shum areas.





(Thane) The new constructions which are to house former slum dwellers and *(Delhi)* Russian doctor at the Kalawati Saran Children's Hospital, New Delhi. Doctors and technicians from the U.S.S.R. are currently engaged in helping in our paediatric and child welfare schemes.





(Above) Milk being distributed to children at Gayasad Health Centre. Apart from milk UNICEF has provided equipment, kits, drugs and vehicles for our health and social programmes and *(Below)* BCG Vaccination being carried out under joint Government and UNICEF auspices



AUTRE TEMPS

AUTRE MOEURS

The 'Little Man' comes into his own

THE YEAR 1947 was a memorable one. For the first time in India's long history, a democratic regime was set up with its economy geared to a new concept, the establishment of a "Welfare State". The little man had at last come into his own. For one thing, he was master in his own house, governed by people of his choice as his representatives and responsible to him. Politically, economically and socially he was well on the way to complete emancipation. He had no longer to look to the "Ma-Bap Sarkar"* for scraps but could demand, as a right, all that a free man requires, not merely for existence, but to live as free men do. To effect this, just a change of Government was not enough, but a change of heart was badly needed if problems were to be viewed in their human perspective and results counted in human values. In the new concept of a welfare state, there could be no exploitation, for man would not live on man but would live with him and for him. It was the culmination of the democratic ideal which had been preached by India's national leaders so often and for so long. It was in its practical application that their ideology was vindicated and their choice for the governance of the state justified, that choice being confirmed four years later in the general elections. Nowhere can this be seen to more advantage than in the realm of social welfare and more particularly in the region of medical relief and public health activities, initiated and purposefully promoted by the Government in the last nine years.

*A Paternal Government.

HEALTH IN INDEPENDENT INDIA

It was no bed of roses for those that had to hold charge of the health portfolio in the new Ministry installed in 1947. The entire political and economic system of India had been disturbed and the Department of Health could hardly escape unscathed. The preceding fourteen years had not failed to leave their mark on India's economy. The early thirties were slump years which were followed by a period of economic semi-somnolence, followed in turn by hectic preparation for and the successful prosecution of a total war involving more than half the globe. It was the aftermath of the war that created the first serious problem for the Government. Economy which had been geared to war production and distribution had to be channelled into a successful 'prosecution' of peace. War-time tightening of the belt had to allow for gradual loosening of consumption controls. In short, a transition had to be effected from a "destructive" economy to a "constructive" one, not an easy task for any Government and doubly difficult for a new one.

A second problem was created by the political partition of the country with all the consequent chaotic conditions entailed in the mass migration of entire communities from one geographical area to another. Yet a third problem that the new Government had to face was that of maintaining administrative efficiency in the face of a grave depletion in the ranks of trained administrators, the British element having elected to retire rather than serve the new Government and a large part of the Muslim element having opted for service in Pakistan for manning the newly formed Government there. Each of these problems by itself would have been a serious menace to stability but the three together almost threatened to cripple an infant democracy. If it

THE 'LITTLE MAN' COMES INTO HIS OWN

emerged triumphant it was only because it was sustained by the faith that the masses had in their leaders and by their undying hope of the future.

The impact of the new ideology of a "Welfare State" was perhaps greater in the sphere of public health than in many of the other activities of Government. Under the previous regime, medical relief was nobody's birth-right but a kindly Sarkar's gift. Mass health and hygiene programmes had no real place in the social economy of the country. Only when epidemics threatened to annihilate entire communities, did the authorities bestir themselves into hasty action. Programmed control measures were the exception rather than the rule. Medical relief was meagre as is shown by the *per capita* expenditure which varied from one to five annas in the larger provinces in 1936. It had no doubt stepped up to the minimax of 2½ annas and 13 2/3 annas by 1947, but that could hardly be termed adequate.

When the Bhole Committee was conducting its survey, it found that hospital facilities provided in India were only 0·24 beds per mille as against 10·48 in the U.S.A. (1942), 7·14 in the U.K. (1933) 8·32 in Germany (1927), 3·72 in France (1929) and 4·66 in the U.S.S.R. (1940), the norm suggested by medical and health experts in the U.S.A. being 5 beds per 1000 of population. Even Czechoslovakia which considered itself a backward country in the field of health and hygiene had 3·3 beds per 1000 of its population as long ago as 1937. The average population served by a medical institution, hospital or dispensary in India ranged in 1947 from 21,363 to 49,267 per unit.* Added to this was the paucity of trained medical personnel, of nurses and other hospital attendants. The picture was, indeed a sombre one.

*The figure of 12,979 for Coorg has not been taken into account as this area has been merged into the State of Mysore.

HEALTH IN INDEPENDENT INDIA

In a country, 82·7 per cent of whose population lives in rural areas and largely constitutes the poorest and least advanced sections of the community, the people have to depend almost solely on medical facilities provided by the State. Absence of such provision could only be construed as a denial of the benefits of medical aid to over four-fifths of the total population. The first essential, therefore, was the reorientation of the entire policy into one in which medical relief and health and hygiene programmes could flow down to every section of the community, irrespective of age or sex, caste or creed, social or economic status or any other consideration. The only criterion was that every Indian had a right to expect his Government to provide for him, within the compass of existing and potential resources, the benefits of medical aid and measures for combating diseases which latter, if they did not kill him outright, sapped his vitality, curtailed his working life, lowered his earning capacity and reduced his economic status, thus making him more prone to disease—a complete vicious circle.

Once the policy was laid down, the entire health executive of the Central and State Governments could set about finding solutions for the three major problems which were confronting them in 1947. The transition from a war to a peace economy had been exercising the mind of the previous Government, fortunately not to the complete exclusion of forward planning for development. In furtherance of this objective the Bhole Committee had been appointed in 1943 to survey the whole field of health in India. The terms of reference of the Committee were pretty wide though it is difficult to assess the extent to which the far-reaching recommendations of this Committee would have been implemented had the then Government remained in power longer than it did.

THE 'LITTLE MAN' COMES INTO HIS OWN

With the linking of industry and agriculture with the war effort, controls had been imposed on civilian consumption, with the result that the standard of living had suffered. There was simply not enough to go round. Whether it was food, clothing, shelter or drugs, everything was in short supply except money which, though with a depreciated purchasing power, was plentiful especially in the urban areas where war time industries flourished. But even with the gradual lifting of controls and the removal of restrictions, the artificial values of wartime still remained with us. Greater concentration of amenities were to be seen in the towns and cities of India. Therapeutic aid, preventive medicine and better sanitation were no exception, accentuating the paucity of these in the 550,000 villages. The balance had swung city-wards and had to be corrected.

The partition brought in its wake another major problem, the urgency of which could not be denied. In the three months following August 1947, not less than three million displaced persons from East and West Pakistan who sought refuge in India put themselves under Government care. The onus of making arrangements for housing, feeding and clothing them and in providing other services for them fell on the shoulders of the Central Government. These millions had to be located in camps until other places of residence and occupation could be found and the Central Ministry of Health and the Directorate-General of Health Services had to undertake the stupendous task of maintaining these concentrations of uprooted individuals in healthy, sanitary conditions and to provide all the medical relief and aid that were wanted. Apart from this, wherever State Governments had to look after these camps, it was

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the Central Government which had to help the State authorities with medical supplies and personnel with the resultant severe strain on their already depleted resources.

The advent of Independence and the partition of the country together created a new situation in so far as the executive branch of the Government was concerned. The British and Dominion Officers, who were serving in India, always looked up to Whitehall as the ultimate master, as their services had always been kept outside the purview of the legislatures in India. These officers could not reconcile themselves to serving what they virtually considered an alien Government and most of them decided to retire. As a result, the strength of the administrative and executive personnel in the Health Ministry was reduced considerably. But further trouble was to follow. The partition of the country meant the necessity of providing twice the number of trained top administrators to man the departments in both Pakistan and India. As a result there was a further drop in the ranks of trained administrators in India partially made up by those from Pakistan who had opted for India. No doubt this gap was later filled by promotion and fresh recruitment but that could hardly be done immediately.

Two main factors helped the new Government to tide over these initial difficulties. One was the undying faith of the masses in their leaders who now formed the Government and the other was the unfeigned loyalty of the services and their enthusiastic support of the new policies. On these officers fell the burden of carrying out, without respite, the expanded programme and it was their unstinted support that helped the Government to carry through their ideological concept of a Welfare State to its logical conclusion of establishing a "Socialistic Pattern of Society".

First Things First

Before the Ministry of Health could settle down to chalking out its long-term programmes for providing medical and health facilities for the millions, it found itself confronted with an emergent situation arising out of the division of India. This was the great post-partition migration. Migrating families from every village and town of Pakistan came to India in an endless stream demanding food, demanding shelter, demanding succour of every sort. Camps had to be opened for them at short notice and facilities provided to an extent which could not have been foreseen earlier. It is computed that not less than thirty lakhs of persons from W. Pakistan had to be looked after in these camps within three months of partition. The concentrations of entire populations, decimated by wanton killings, weakened by fear, hunger and hardships, required the magic touch of a healing hand both physically and mentally. Mere provision of food and shelter and clothing limited only to the extent which could be provided under post-war economic conditions, could hardly assuage the economic distress or reduce the mental agonies of those who had left their hearths to make new homes in regions with different linguistic and cultural patterns. Much more was wanted and it was readily forthcoming; but until such time as they could go to their places of permanent settlement, the refugees had to be accommodated and looked after in transit and relief camps, of which quite a number were needed on both sides of the Indo-Pakistan border. Each of them, whether run by the Central* or by

*Throughout this book the words "Central Government" and "Union Government" are used as synonymous terms.

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Provincial Governments, had to have medical facilities and sanitary arrangements to a much larger extent than those required in more settled communities. The proper sanitation of these camps was a thorny problem which, if left unattended, would have led to raging epidemics which might have wiped out entire communities. In short, the physical, mental and moral strength of the people in these camps had to be kept up and their immediate needs satisfied, no matter what other matters engaged the attention of the Government.

On the Central Health Authorities fell the burden of maintaining many of these camps, for carrying out medical relief, for ensuring healthy and hygienic conditions in them and for rendering assistance in men and material whenever called upon to do so by the State authorities. Medical facilities had not only to be provided as an emergent measure, but continued until such time as the camps were struck and their populations dispersed to their places of settlement.

This emergency created a situation that was out of the ordinary and naturally required a separate set-up to deal with it. In order to deal exclusively with medical relief and public health problems of displaced persons under Government care, a section known as the Refugee Medical Relief Section was formed in the Directorate-General of Health Services, within less than a month of partition. This section was later rechristened as the Displaced Persons' Medical Relief Section and had a separate existence till March 1954.

The first step the new section had to take was the recruitment of medical officers, compounders, sanitary inspectors on behalf of the East Punjab Government in

FIRST THINGS FIRST

order to man the relief camps which had been located in East Punjab. With the shortage of doctors and ancillary medical personnel it was almost an impossible task but because of the offer from several voluntary organisations it became less difficult to place at least a modicum of the personnel required at the disposal of the Provincial Government. These voluntary organisations that sent doctors, nurses and medical students included two Calcutta organisations namely the Relief & Welfare Ambulance Corps and the Indian National Ambulance Corps; the Indian Red Cross Society, the St. John Ambulance Brigade, the Marwari Relief Society and a number of other bodies. The selected personnel were flown to Jullunder, Amritsar, Ferozepur and other places.

There were other difficulties. For instance, in the Gangaram Hospital, Lahore, which formed the base hospital for sick migrants passing through Lahore, no work could be carried on on account of the paucity of staff. The situation was saved by a contingent of voluntary teams and medical stores from the King Edward VII Memorial Hospital, Bombay who were flown to Lahore on October 9, 1947. This batch was relieved by a fresh one which arrived there one month later.

Of the different relief camps in India the Kurukshetra Camp was the largest. The administration of the camp with its population of 1,20,000 was taken over by the Central Government on the 23rd October 1947 with the attendant responsibility for medical and public health administration. Three sizeable hospitals with an initial accommodation of 600 beds and 14 dispensaries were functioning within the camp. The hospital accommodation was later raised to 1,000 beds when the number of inmates touched the 3 lakh figure. The number of nurses and

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health visitors were so short of requirement, that the Health Minister had to issue a special appeal for assistance. As a result, a considerable number of voluntary and paid nurses offered their services for work in these camps. The nursing staff was further augmented by establishing a training school for displaced girls in nursing and public health procedures and ploughing them back into hospital and health work in the camps. The control of the camp was transferred to the Punjab State Government in August 1948, but nine months later the camp was again taken over by the Central Government until its disbandment in April 1950. The hospital for tuberculosis patients attached to the camp was shifted to Sangrur in the State of PEPSU in December 1950.

With further augmentation of migrants from the Sind area, the Central Government opened a number of transit and regular relief camps in the States of Bombay, Rajasthan, Kathiawar and Central Provinces (now Madhya Pradesh). There were 15 camps in Bombay State with a peak population of 2,80,000; 15 in Rajasthan sheltering 78,000; 7 in C.P. and 8 in Kathiawar with 45,000 and 30,000 inmates respectively. The total population of these camps was over 4,33,000. Within a year of their opening, the running of these camps was taken over from the Centre by the respective States in whose territory they were located. Two other camps, for the running of which the Central Government took responsibility, were located at Jammu and Nagrota. By the end of 1949 the number of people in these two camps had reached 32,000. The inmates were rehabilitated by the State of Jammu and Kashmir in July 1951, when there was no further necessity for continuing hospital arrangements. The hospital was therefore closed down and the medical and other stores lying in the hospital were handed over to the

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Government of that State. A fifty bed hospital was functioning at the relief camp at Yol, which was started in September 1950 for accommodating 13,500 refugees from the Pakistan occupied territory of the State of Jammu & Kashmir. The hospital continued to be run and medical facilities and sanitation arrangements supervised till the evacuation of the camp in 1953.

The camps at Faridabad, in Rajasthan and at Nilokheri were originally administered by the Central Directorate General of Health Services till the charge of these too was handed over to the respective Development Boards in Rajputana and Faridabad in 1950 and to the Administrator of Nilokheri colony in 1951; but the Centre still continued to render technical advice and such other assistance as was required from time to time by the Boards.

Apart from immediate medical relief through dispensaries and hospitals, the Government had also to undertake steps to prevent the spread of epidemic diseases which is a usual feature of all such temporary large scale congregations of people. Mass vaccination against small-pox and large scale inoculation against cholera, plague and other infectious diseases were carried out in the relief camps. Anti-malarial measures were undertaken in all camps and in the surrounding areas.

General standards were laid down for the carrying out of medical relief and sanitary arrangements in all the camps. In the relief camps, for instance, hospital accommodation was provided on a scale of 12 beds for every 5,000 of the population, 25 beds for 10,000, 50 beds for 20,000. Special diet for hospital patients was provided where necessary. All food in hospitals as well as hospital clothing were supplied free to the patients. Multi-

HEALTH IN INDEPENDENT INDIA

vitamin tablets, powdered milk, fruit juice, extra rations of milk for the old and infirm, for children under five years and for nursing mothers, were also supplied free of cost. A standard scale of medical equipment was fixed for each 12 bedded hospital as a unit. One set of expendible and one set of non-expendible stores were supplied as initial equipment on a unit basis. Replacement of expendible stores was done under a monthly indent system.

Water supply in these camps was from deep wells and the drinking water was disinfected by means of bleaching powder and potassium permanganate. Horrock's apparatus was given as standard equipment for testing the quality of the water and bleaching powder and potassium permanganate were also made available as standard stores. For the disposal of night soil deep trench latrines were provided, wherever the soil permitted, on a scale of 4 to 5 per 100 of the population. In some camps the pan system was used and the night soil was trenched with the free use of D.D.T. solution. Refuse was either burnt or buried.

The magnitude of the operations can be seen from the expenditures incurred on various camps. The running of the Kurukshetra camp from its inception upto the end of March 1949 involved an expenditure of Rs. 7,41,820. In 1949-50 Kurukshetra camp accounted for an expenditure of Rs. 3,94,035, Faridabad of Rs. 1,78,000. Blanket authority was given in 1948 to the D.G.H.S. in the matter of the appointment of medical, public health and nursing staff within the scales laid down in respect of pay of medical and public health supervisory staff; for expenditure on furniture, stationery and sanitary stores; on the patient including hospital forms, requirement of food, medicines, sera and vaccines; on hospital equipment and on transport. By July 1949 the situation showed some

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signs of easing and the population of the camps started shrinking. The Ministry of Health thereupon decided to effect a progressive reduction of the medical, public health and ancillary staff employed in respect of these services at the different camps.

The story of the exodus from East Pakistan is somewhat different. About 25.75 lakhs migrated to the Indian Union from East Pakistan upto the end of March 1951. All the relief camps sheltering this vast population were administered by the West Bengal and Assam Governments with the exception of Ranaghat, Rupsi, etc. which were directly administered by the Ministry of Rehabilitation. Medical and public health stores had however to be supplied by the Central health authorities. The supplies included items like R.D.* village chests, nearly five tons of bleaching powder, and some 1000 one pound tins of Marmite.

In 1950 March, cholera broke out in the Belonia (Tripura State) and Karimganj (Assam) camps and medical personnel and supplies had to be rushed to the spot. The Calcutta Medical Stores Depot supplied sulphaguanidine tablets, penicillin, tetanus antitoxin, antigas gangrene, calcium gluconate ampoules and bed sheets. A typical example of other stores acquired from the Central Government Medical Stores and utilised for refugees was that of items such as 15,000 paludrine tablets, 1,00,000 each of multivitamin and vitamin compound tablets, which were sent to the Secretary Indian Tea Association, Surma Valley Branch, Silchar, Assam. The advice of the D.G.H.S. was sought by the State Governments in many other refugee problems one such instance being the selection of a suitable site for the displaced persons' colony and womens' home near Rupsi in Assam.

*Rural Dispensary.

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It was a period of great trial and tribulation both for refugees and the Government. It imposed an exacting burden on the Central Ministries which were in one way or another concerned with the many and varied problems arising out of the great migration. It was even more so for the Ministry of Health. The suddenness with which they were confronted with an emergent situation made it an extremely onerous task to provide medical facilities and ancillary services when these were already short of even the basic requirements throughout India. But onerous or not, the task had to be undertaken and it was done with courage, imagination and efficiency.

The Old Order Changeth

With the acceptance of the new ideology of a Welfare State with all its ramifications in the fields of social, medical and health services, the need for reorientating both the organisational and procedural systems became pressing. If medical relief was not to be the perquisite of a few but the right of the many, not only curative medicine but preventive medicine, including environmental hygiene, had of necessity to reach further afield. A highly centralised system offered little scope for attaining this objective and it was obvious to the Government that the first step should be as nearly a complete decentralisation as feasible of all executive functions in this sphere.

Even during the first two decades of this century the vast majority of the people living in the rural areas had been deprived of the benefits that modern medicine can confer. What medical relief was available was much more urbanised in those days than is realised today. In cities like Bombay and Calcutta and in other presidency towns there were both Governmental and private institutions which catered to the needs of residents. In addition, services of qualified private practitioners, who mostly gravitated to the cities, were available to such as could buy them. But in the mofussil areas it was mostly the district headquarters that could boast of a hospital under the District Medical Officer or Civil Surgeon. He was assisted by Assistant and Sub-Assistant Surgeons drawn from the lower cadre of the Army called the Indian

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Medical Department or from the ranks of medical graduates and licentiates of Indian Universities. There were also a few smaller units and dispensaries scattered round the district with perhaps a small hospital at the headquarters town of a subdivision, but neither their number nor their equipment was such as to effectively reach those that needed their services most.

After the introduction of the Montague-Chelmsford Reforms in 1922, the Devolution rules placed a fair proportion of medicine and public health matters under the control of the Provincial Governments. The Centre, however, with its right to render advice and make suggestions still had the upper hand and could direct the course of action of the Provincial Governments even in those matters which were under the control of the Provinces. It was evident that this was a makeshift arrangement without any real attempt at reaching a solution. It is possible that the underlying idea was to allow a medical relief and a public health system to evolve itself without undue interference from the Central Government, effective control being exercised by the system of placing Indian Medical Service officers in charge of the medical and health administration of districts and even of all hospitals and medical institutions of every category in the country.

The Government of India Act of 1935 clarified the situation and divided the entire field of health activities of the Government into three categories: those that fell within the scope of the Provincial Government's activities, those that were in the concurrent list in which both Central and Provincial Government were concerned and finally those that were to be absolutely under the control of the Central Government. The Central Government's

responsibilities were in respect of medical research, port quarantine, higher medical education and for the medical and health administration of the areas directly administered by the Centre. The technical organisation at the Centre was under the Director General of Indian Medical Services who was the principal medical advisor to the Government of India in the Department of Education, Health and Lands. He was also the head of the Indian Medical Service and of the Indian Medical Department. In matters of public health he was assisted by the Public Health Commissioner. The head of the medical administration in the provinces was the Surgeon-General to the Government or, as in some cases, the Inspector General of Civil Hospitals. The two small States of Sind and Orissa had a Director of Health Services and a Director of Health respectively. The set-up at the district level remained practically the same as before. There was a Civil Surgeon who was in charge of the headquarters hospital and also in overall control of the branch hospitals and dispensaries manned by the officers of the provincial and subordinate medical services. A new and welcome departure, however, was that in some provinces public health matters had been placed under the control of a whole time District Public Health Officer. Another feature was the appointment of Hospital Advisory Committees without, of course, any executive functions which, though varied in scope and composition, functioned as advisors to the Provincial medical authority and the local government on the needs and the working of hospitals and other medical institutions. Poor and indigent patients were to be given free medical and surgical treatment and a limit was fixed for qualifying for exemption from payment. Fees were however levied for accommodation in special and family wards. These included the cost of medicines, dressings and nursing. Despite these conces-

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sions, medical relief reached only a few. This was primarily due to the inadequate number of hospitals and dispensaries as also of qualified staff for manning them. In the provinces, for instance, there was only one single hospital or dispensary for a large number of people ranging from 25,138 in Assam to 81,087 in Uttar Pradesh a sorry state of affairs, which continued without much change till the time the Interim Government took over.

Soon after taking office, the Interim Government called together the Health Ministers of the various provinces to a conference with the Central Health authorities. Its main importance lay in the fact that the Prime Minister, Jawaharlal Nehru, in his inaugural address gave a clear indication of the shape of things to come.

While deploring that little attention had been paid in the past to Health which was the foundation of all things, he said that economy in the sphere of health might mean greater expense in the long run, as loss of life and lack of well being of those who earn and create wealth meant a loss to the nation. He emphasised that the health of the villages required special attention as the country derived its vitality from them and hence benefits of health must be extended to the whole countryside.

The deliberations of this Conference and the Report of the Bhore Committee together helped to give the Government a clear picture of the country's health requirements and the type of organisation that would suit conditions obtaining in modern India.

By 1947, when the new National Government assumed

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office, it had not only a clear picture of the nation's requirements but also sufficient information on the various systems of health administration adopted in other countries. In the U.S.A. the health service is organised at the Federal level on semi-military lines with a Surgeon-General as head of the administrative set-up consisting of Commissioned Officers, a Reserve Corps and civil employees. One of its functions is to provide technical consultative and financial assistance whenever needed to State and local Government health organisations. In respect of health legislation and administration the States are practically autonomous and as a result, the public health laws of the 48 States of America vary greatly in scope. While some have comprehensive enactments in codified form, others have legislation on *ad hoc* lines to suit specific objectives. There is a provision for State Boards of Health but their size and composition too vary greatly.

In the United Kingdom, health is a highly centralised subject with the Health Ministry exercising wide powers of supervision over local authorities. These powers have been further augmented and the Ministry of Health, under an act of 1947, has assumed responsibility for medical as well as health services. In Italy the opposite is true. Here it is the local authorities that are primarily responsible for all medical and health matters. In some cases this responsibility has even devolved on voluntary bodies enjoying State support. In Norway, health and related activities like welfare and social insurance form a single Ministry.

In the U.S.S.R. public health is a centrally administered subject with the Union Ministry of Health working in close collaboration with the Ministries of Public Health of

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the sixteen republics. In the Soviet Union approximately one fifth of the total budget is earmarked for health and medical services; all doctors are state employees, no private practice is allowed and medical aid is free to all people. A highpowered inspectorate checks the work of the medical men throughout the union and helps to maintain a high standard of efficiency. Czechoslovakia also has a centralised Ministry of Health and the Minister has the support not only of the administrative machinery but also of all the leading specialists and heads of health institutions. All medical aid is available to approximately 90 per cent of the people, the cost being covered by the state budget and by insurance.

With the example before them of these different types of organisations in different countries and of the type of organisation evolved in this country over a long period, Government was able to decide on the future health set-up and to fix on the procedures of discussion and coordination between the Centre and the States. None of the foreign systems could be adopted in India *in toto*. What good there was in each system was however tried to be incorporated in the system and adapted to suit Indian conditions.

A second health conference was called in 1948. By this time the National Government which had taken over in 1947 had had a year in which to assess the various problems connected with the organisation of medical relief and health measures in the country. It could now settle down to the discussion of each individual problem and judge the value of various measures proposed for coping with specific items. For instance, in the case of tuberculosis, for the first time in Asia, measures for mass vaccination were taken on a Central Governmental level. Other questions that merited serious consideration and were brought up for discussion related to industrial health, nutrition and

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leprosy. The conference also dealt with the manufacture of surgical instruments and other medical appliances in India as well as the development of the drug industry with a view to making the country self-sufficient in these important respects. On the organisational side, the training of medical and ancillary personnel, the maintenance of an All-India Medical register and the improvement in the machinery for the registration of vital statistics were three other items which deserve special mention.

The third Health Ministers' Conference was held in September 1950. There was an under-current of frustration in the deliberations held this year, frustration mainly due to the lack of resources. This was inevitable. The country was suffering from growing pains and every department of Government required greater latitude in the matter of monetary provision for the implementation of immediate plans for the expansion of its activities. The Health Ministry did get its share of the additional provision but it was by no means enough. Nevertheless 'Health' had to be given its rightful place as one of the most important of the State's activities by the Planning Commission when this body came into being and has since found a niche in the two Five Year Plans. The 1950 Conference considered some very important questions, one such being the report of the Indigenous Systems of Medicine Committee and of the Homeopathic Enquiry Committee. The importance attached to the indigenous and homeopathic systems of medicines lies in the fact that the paucity of an adequate number of qualified practitioners of modern medicine makes people living in the 5,50,000 odd villages of India, more often than not, to resort to vaid, hakims or homeopaths.

Soon after India became a Republic in January 1950, it was felt that a fresh approach was necessary if these

conferences between the States and the Centre were to be held to common advantage. One of the resolutions passed by the 1950 conference was in regard to the establishment of a Central Council of Health, of which the Central Health Minister was to be the Chairman and the State Health Ministers members. The Council was duly established by Presidential Order on the 9th of August 1952.

The Central Council of Health ushered in a new era. Article 263 of the Constitution of India, under which the Central Council of Health was established, provides for the establishment of such a Council in the following circumstances which are clearly stated in the article which runs :

If at any time it appears to the President that the public interests would be served by the establishment of a Council charged with the duty of:—

- (a) inquiring into and advising upon disputes which may have arisen between States;*
- (b) investigating and discussing subjects in which some or all of the States, or the Union and one or more of States, have a common interest; or*
- (c) making recommendations upon any such subject and in particular recommendations for the better coordination of policy and action with respect to that subject,*

it shall be lawful for the President by order to establish such a Council, and to define the nature of the duties to be performed by it and its organisation and procedure.

When it is seen what a large number of subjects falls in the concurrent list, the need for continuous consultation and mutual understanding and cooperative effort between the Centre and the States becomes obvious. The first

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meeting of the Council of Health was held at the end of January 1953. In her inaugural address at this meeting the Chairman of the Council, Rajkumari Amrit Kaur stressed the basic principle that a rational health policy could only be formulated and implemented "through active collaboration between the Centre and the State Governments on the one hand and between the State Governments on the other". She also suggested in the course of the proceedings that a brief review should be forwarded to the Central Government by each State Government in respect of the progress made in the implementation of the resolutions passed in the previous meetings, a suggestion which was accepted with excellent portents for the future of cooperative effort. Its deliberations included *inter alia* the mass BCG vaccination programme in India and the National Malaria Control Scheme as envisaged in the First Five Year Plan. The Council accepted the principle that, in conformity with the rest of the world, one uniform standard of education in modern medicine of the university degree standard should be adopted. It also suggested schemes for the training of auxiliary personnel for organising health services. Its most important resolution however was the acceptance of the Environmental Hygiene Committee's Report and the suggestion that a comprehensive Public Health Act embracing all phases of environmental hygiene should be enacted by each State and that the Government of India should appoint a committee to draw up a model draft act which could be enacted by the State Legislatures with such modifications as might be necessary to suit local conditions.

The Central Council of Health held four further meetings. The second meeting was held in 1954. The most important item discussed at this meeting was the fixation of the norms for a course of training for practitioners of

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the indigenous and homeopathic systems of medicine. The Council was of the opinion that in all the three systems there should be a five years' degree course as in the modern system of medicine and that admission should be restricted only to those who had passed their intermediate science examination. The Council also recommended that research in the ancient systems of medicine should be promoted.

The Council met again for its third meeting in 1955. Among the subjects that were discussed was the question of recruitment and employment on a permanent basis of personnel for the BCG, malaria and the community project programmes. The Council laid great emphasis on the necessity of bettering the service conditions and of raising the emoluments of the nursing staff employed under the State Governments. The great importance the Council attached to the water supply and sanitation problems of India weighed sufficiently with the Planning Commission to give this item its due place in the Second Five Year Plan. ,

At the fourth meeting, held in February 1956, important recommendations made by the Council concerned the development of the Tuberculosis Scheme as a national programme and the establishment of separate public health engineering units in the Directorates of Health Services of the State Governments.

The fifth meeting was held just ten months after the fourth in view of the coming general elections. The Central Health Minister, Rajkumari Amrit Kaur, at this meeting reviewed the progress made in the implementation of various health programmes by the Central and State Governments. For the first time population control measures came up for discussion and the Council made a positive recommendation "that State Governments should

consider the appointment of Family Planning Boards, similar to the one recently established by the Union Government, to effectively organise and supervise the family planning programme and also that a whole time Family Planning Officer should be appointed in each State Health Directorate". The Council felt that, in the case of schemes projected by the Centre, the State Governments were adversely affected by the expenditure coming out of the State allocation and suggested that the Planning Commission should empower the States to utilise the funds provided by the Centre as an additional grant. The Council also recommended that the Union Health Ministry should draw up a draft bill for a Public Health Act for circulation to the State Governments. The Leprosy Committee which was appointed as a result of the recommendation of the third meeting of the Council had by now surveyed the whole field and made its recommendations. The Council backed the suggestion of legislation on an All-India basis to facilitate early control of the disease and requested the Centre to give high priority to this public health problem and take steps to prevent the spread of infection caused by inter-state migration.

The Council of Health during one of its earlier meetings had appointed a Committee to investigate the type of training in pharmacology received by a practitioner of the indigenous systems before considering the question of allowing them the right to prescribe drugs under schedule 'H'. The consideration of the report of this Committee, of which Dr. Swift was the Chairman, was deferred until another committee appointed under the Chairmanship of Sri Dave had reported on the question of establishing uniform standards in respect of the education and practice of vaid, hakims and homeopaths.

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The establishment of the Central Council of Health has undoubtedly helped to a very great extent in providing an effective forum for the discussion of all matters relating to the country's health and medical relief problems whether they concern the Centre *vis-a-vis* the State or the States in their relation with one another. The most notable of the achievements of the Council are the impetus given to the indigenous and homeopathic systems of medicine both in the matter of better training of practitioners and research and the acceptance of public health engineering, health education, family planning and of tuberculosis, malaria and leprosy and other control programmes as part of an integrated plan which affects both the Union Government and the State Governments. An instance of successful cooperative effort is the proposal for a uniform Public Health Act in all the States, a model act having now been drafted by the Central Ministry for circulation to the States. Reference can also be made to an important recommendation concerning the improvement of the standards of medical education by State Governments, Universities and the Medical Council of India on the suggestion made by the Medical Education Conference. On two questions however no finality has been attained; one is the continuance of the Medical Stores Organisation at the Centre and the other is the abolition of the licentiate course. The State Governments had been divided on these two issues. Apart from this the great success that has marked the working of the Council of Health has been mainly due to a healthy appreciation of each other's point of view and in an honest attempt to find common ground for getting things done in the larger interest of the provision for a better health service to the nation.

The Central Health Minister in opening the first health conference held in Hyderabad had stressed the democratic

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aspect of the discussions and deliberations of the Central Council of Health. She said then :

“No planned programme of action can, however, be evolved or carried out successfully without the responsibility for such action being borne on the joint shoulders of all Governments. In our deliberations we may not be able to achieve complete unanimity on every matter that is discussed but the essence of sound democratic administration is the acceptance of the principle that although while discussions are in progress every member should have the fullest possible right to put forward his views, as soon as decision is taken its implementation loyally and without any reservations becomes equally his duty and privilege. It is in this spirit, I hope and trust, that we shall contribute our share to the work of this Council”.

It is obvious that this sentiment has been respected, and her expectations realised. Had it not been so, the Central Council of Health would not have been able either to achieve all that it has done or to have become a popular entity with all the States.

Dead Men Do Tell Tales

Yes, the dead do speak and to conscientious democracy their voices are louder than trumpet calls calling it to action. So it was in India. The mute voices of the dead and the feeble voices of the dying refused to be denied. The millions of men and women who did not live to see even their 34th birthday, the mothers who did not live to suckle their babies, the born-dead, the infants who did not live beyond their childhood years, the living-dead whom diseases had not killed but left maimed and disabled—all these cried for immediate attention so that others that came after them could live normal lives and reach the span of three score years and ten allotted to humans by the ancients.

In 1946, not less than 1,900 persons out of every lakh of the population in India, died. In 1947 another 70 had been added to this figure, the actual number of deaths being a little over 47 lakhs. If the death rate in India is not as low or the expectation of life not as high as in many other countries, it is because India has been the unhappy hunting ground of many endemic and epidemic and deficiency diseases. In 1947 the average Indian male had at birth an expectation of life of 32·09, while the female had an expectation of 31·37. The average Brazilian even in 1940 had a lease of life ten years higher than the Indian figure. In countries like New Zealand the expectation of life exceeds 65. The American Negro could boast of living

DEAD MEN DO TELL TALES

a decade and a half longer than a national of the Indian Union. The table below serves to fix India's place which needless to say, is one of the lowest in the scale.

Country	Expectation of life at birth	
	Males	Females
1. New Zealand	65·04	67·88 (1931)
2. Australia	63·48	67·14 (1932-34).
3. Union of South Africa	57·78	61·48 (1925-27) (European population).
4. Canada	59·32	61·59 (1929-31)
5. United States of America	59·12	62·67 (White population).
	47·55	49·51 (Negro population) (1929-31).
6. Germany	59·86	62·75 (1932-34).
7. England and Wales	58·74	62·88 (1930-32)
8. Italy	53·76	56·00 (1930-32)
9. France	54·30	59·02 (1928-33).
10. Japan	44·82	46·54 (1926-30).
11. India	32·09	31·37

The death rate in India is a matter of great concern. In New Zealand in 1937 out of a population of 1000 only 0·1 people died every year. U.S.A. and Germany had death rates as low as 11·2 and 11·7 per mille, while only nine years ago the Indian death rate of 26·6 was about seven points higher than that of the Federated Malaya States! In 1947-49 neighbouring Ceylon had a death rate of 13·4 per mille. Our infant mortality rate of 145·6 in 1947, compares most unfavourably with 54 in the U.S.A., 64 in Germany, 58 in England and Wales and 106 in Japan.

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Let us now fix the causes of this frightening loss of life which till 1947 lowered our life expectation to such sordid figures. The largest single cause of death was 'malaria' which, according to various computations, accounted for 15 to 20 lakhs deaths per annum. Tuberculosis was responsible for 5 lakhs deaths per year while over 2 lakhs succumbed annually to the ravages of dysentery, diarrhoea and allied diseases. Maternal mortality showed a figure of 2 lakhs per annum. The other endemic and epidemic diseases which have been partially brought under control like small-pox, cholera and plague added another 2 lakhs a year to the death roll.

So much for those that had died. But what of those that were either dying or constituted the ranks of the living dead or of those that were temporarily or permanently disabled on account of debilitating diseases? Amongst such may be counted the 1,000 lakhs* of people who were the victims of malaria, 25 lakhs who were suffering from tuberculosis, the 130 lakhs who suffered from venereal diseases of one kind or another, the 20 lakhs blind and the 20 lakh lepers. not to speak of those who suffered from filaria, hook-worm, guinea-worm, cancer and the rest.

There are many causes that conduce to this appalling waste of human life, the low level of health generally obtaining in India and the consequent deleterious effect on national economy. It is indeed a vicious circle. Diseases sap the vitality of the people, lower the productive and hence the earning capacity, depreciate the standard of living and make the people more prone to disease. It is indeed a multifaceted problem and needs a multipronged attack if the situation is to be controlled and the people made, as far as possible, resistant to disease.

The first and the foremost cause is defective and inade-

*One lakh equals 100,000.

quate nutrition. Either the food is insufficient for the needs of a person or it is so ill-balanced that the health of the individual suffers in one way or another. The average Indian diet in most areas is both insufficient and ill-balanced. It consists mostly of cereals which constitute 9/10 of the total consumption of food stuffs. The eating of fish, meat and eggs is taboo in certain communities and, except in the north, meat is in short supply, while fish is available only in the coastal region. Poultry keeping has unfortunately not yet attained the stage when eggs will be available as a standard part of Indian diet. In spite of all the veneration with which the cow is treated in India she is a semi-starved creature, unable to give even a fifth of the milk that normal cattle do elsewhere. Vegetables are available in good quantity in the alluvial regions but not in the rest of the country, while fruit is seasonal and not enough to meet the needs of the vast population.

Let us think for a moment of the environmental factors and how they affect India's health picture. The lamentably insanitary conditions in which we live are to a very great extent a contributory cause of the spread of disease. Preventive medicine lays great stress on environmental hygiene without which the control and eradication of epidemic and endemic disease and the prevention of the transmission of communicable diseases cannot be successful. All communicable diseases are of bacterial, bacillary or virus origin and transmission takes place through animal carriers, insect carriers or through the contamination of milk, water, fruit and other articles of diet and even contact with contaminated articles of wearing apparel, bed linen and eating and drinking vessels. Every finger points to the lack of environmental hygiene as the principal culprit. When water is not polluted by sillage and sewage or contaminated in other ways, water-borne diseases will not have a chance of surviving. If

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refuse and filth are burnt and not allowed either to accumulate or to rot in places near human habitation, flies and other insects will not be able to transmit any infection from the suffering to the free. Slum areas which harbour rats are another cause for the spread of a disease like plague but this fortunately has now come to be controlled. Lack of sunshine and fresh air help air-borne diseases like tuberculosis where the bacilli are largely disseminated by desiccated sputum particles floating in the air.

The third important factor in the high prevalence of mortality and morbidity in India is the lack of medical facilities in the way of medical institutions and the paucity of medical and ancillary personnel. In 1947 the total number of hospitals in India was 6,669, consisting of 4,617 in rural areas and 2,052 in urban areas. Considering that 82.7 per cent of the total population live in the villages one can see the great disparity between the facilities provided in the urban areas, supplemented as they are by private practice, and the facilities available in the rural areas. In the Bihar of 1947 for example there was only one medical institution for 49,267 people. The best in this respect appears to be U.P. with one hospital or dispensary for 20,000 persons. The position with regard to doctors was equally disheartening. In 1943 there were, for instance, 47,400 registered medical practitioners giving the ratio of one doctor to 6,300 of population. Out of these, 13,000 doctors were working in Government or other medical institutions which leaves 34,400 in private practice. The vast majority of these latter was to be found in the urban areas. The position in regard to nursing was even worse. In India we had only one nurse for 43,000 persons. This compares most unfavourably with the U.K. where there is a doctor per thousand and a nurse per three hundred of the population. In India, on an average, we

had one health visitor to cater to the need of 4 lakhs of persons and one midwife for 60,000 as against 4,770 and 618 respectively in the U.K. As for hospital accommodation, only 0.24 beds could be had per thousand of the population as against 10.48 in the U.S.A. and 4.66 in the Russia of 16 years ago. It was obvious from these figures that the provision of medical facilities had not even touched the fringe of the problem. Even on a conservative estimate made by the Bhole Committee, India's minimum requirement for an estimated population of 370 million, was approximately four times the present number of doctors, a hundred times the number of nurses and health visitors and about twenty times the number of midwives. As for qualified pharmacists and dentists we had only one for 40 lakhs and 3 lakhs respectively of the population and the Committee suggested 825 times the number of pharmacists and over 90 times the number of dentists as India's minimum requirement. This was the state of affairs in 1947 and the task that awaited the new democratic set up was, to say the least, colossal.

It called for a new and better deal to the populace by way of augmented medical relief, expanded health and hygienic measures and of better standards of nutrition and living. It called for an all-out war on disease which was cutting off many in the prime of life and many more in infancy. The Indian nation answered that call and declared an unrelenting war on disease.

In the following pages is contained the epic story of this war, of the grand strategy, of the operational strategy and tactics of a war on every front, of its battles and of its campaigns.

In the ultimate success of this war lies the fulfilment of the nation's promise to the dead, that disease *shall* be conquered. And when it is, they that have died untimely shall not have died in vain.

THE GRAND STRATEGY

Mobilisation of Manpower

The first step to be taken in projecting a total war is the evolution of a grand strategy. Grand strategy is not so much concerned with individual battles or campaigns, but mainly concerns itself with the mobilisation of human and material resources for the prosecution of the war, the breakdown of enemy resistance both actual and potential, the building up of a second line of defence, the maintenance of the morale of the people and the building up and stock-piling of resources to last until such time as victory is ultimately won.

When India declared a total war on disease and had to evolve a grand strategy for the purpose, she had to do so in the full knowledge of all its implications. For her first line of attack she had to build up her manpower consisting of doctors, surgeons and all other medical and ancillary personnel including trained public health workers. She had to build up her bases in the shape of hospitals, dispensaries, ensure a steady supply position by strengthening medical store depots, establish and enlarge laboratories for the manufacture of vaccines, sera and anti-biotics, and encourage the manufacture and building up of stocks of medicines and medical equipment. Intelligence in regard to "enemy" strength, disposition and vulnerability had to be collected by organising research work and field surveys. Programmes had to be initiated so that strongholds of endemic and epidemic disease could be successfully stormed and their communication systems

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consisting of germ carriers like contaminated water, milk or food stuffs, animal carriers like rats, or insect carriers like mosquitoes or flies, could be destroyed. A second front had also to be built up by creating resistance to disease in human beings. The morale of the people had to be maintained by a successful health education programme which would give the people an idea of the nature of different diseases, the method of preventing their attacks and the employment of curative measures, therapeutic or surgical. Enemy supplies and reinforcements had to be cut off by adopting measures for ensuring pure water supplies and proper sanitation.

It is a war in which, like all modern wars, every national of the country is a soldier whether combatant or non-combatant. In a country like India with a population of 350 million, over 80 per cent of which lives in villages and hamlets, the accent could only be on the personal element, every one of the people striving in the furtherance of the main objective—the eradication of disease. Every town, every village, every hamlet provided a battle arena and could not be left out of the strategical plan. Government, therefore, decided that medical relief and public health should go to the village rather than that the village should come to the town for them.

In India of 1947, there was only one medical institution like a hospital or a dispensary to cater to the needs of people ranging from 20,000 to 50,000. There was only one doctor for 6,300 of the population. There was a similar but even greater paucity of ancillary medical personnel. Very much indeed had to be done in bringing up our manpower position to optimum strength before we could come upto the standard of even semi-advanced countries. The Indigenous and Homeopathic systems of

MOBILISATION OF MANPOWER

medicine were patronised by many. While standards of training and qualifications for doctors had been strictly maintained, those in respect of practitioners of Indigenous and Homeopathic medicinal systems left a lot to be desired. These latter had hitherto operated wherever doctors were not available, and they could fill a useful role only if the standards of their qualifications and their training course were improved and standardised. Large scale operations for the control of India's enemy No. 1 'malaria' and enemy No. 2 'tuberculosis' had to be initiated and progressed. Campaigns had to be undertaken for curbing sporadic outbursts of disease like cholera and plague by discovering and destroying their endemic foci. Public health measures had to be intensified manifold. Endeavours had to be made to make India self-sufficient as far as possible in the manufacture of medical and surgical requirements and biologicals. Barriers had to be erected at all sea and air ports and land boundaries to prevent invasion by disease from other areas. Resistance to disease had to be built up by raising living standards which reflected on the health and hygiene standard of the people. Nutritional standards, both qualitative and quantitative, had to be improved by evolving a proper diet suitable for the various climes and to the relatively smaller purchasing power of the people. Pressure on the resources had to be reduced by putting a check on an untoward increase in the population. And all these had to be woven into one integrated plan for the conquest of disease. It was necessary in the interest of the general plan that certain priorities should be fixed so that the plan could progress step by step and that at no stage should there be any backsliding as a result of shortages which always render difficult the next stage of operation.

It is an old axiom in regard to human warfare which says that just as men need weapons, weapons need men

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to handle them. Before increasing medical facilities and undertaking large scale public health measures or disease control operations, it became obvious that heed must be paid to the necessity of having trained men and women to run them. The personnel required can be divided into two categories: medical, which of course includes those trained in medicine, surgery and all allied specialities including mental diseases; and ancillary personnel such as nurses, midwives, dais, health visitors and the like.

According to the Bhore Committee there was only one qualified doctor to serve the needs of 6,300 of the population in India. In the two Five Year Plans the target fixed was one doctor to 5000 of the population as within the range of practical possibility. By the end of 1960-61 we shall require for an estimated population of 400 million no less than 90,000 qualified doctors including the 10,000 needed for supervisory duties or roughly 3000 new doctors every year. In 1951 we had only 30 colleges admitting 2500 students per annum. Graduations unfortunately were not commensurate with the number of admissions and the shortfall was estimated at between 30 and 40 per cent of the total admissions. In order to increase the number of total registered practitioners by an annual output of 3,000 which would ensure the attainment of the target by 1961, we require 4,000 to be admitted to medical colleges every year. There were two ways in which the out-turn of graduates could be increased, (a) by increasing the number of colleges and (b) by employing the shift system in some colleges. To achieve this, a graduated plan was drawn up for increasing the number of colleges and for the establishment of an All-India Institute of Medical Sciences in New Delhi. As a result, the number of colleges was increased by 12 at the end of the First

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Five Year Plan and admissions had been stepped up to 3,500. By 1956 the number of qualified doctors had increased to 70,000 and at this rate the Second Five Year Plan, in the normal course, could make available 82,500 doctors for rural and urban work, both under State employment and in private practice. The gap of 7,500 between the target and probable achievement could only be filled by a further stepping up of the progress. The provision for this item had therefore to be increased in the Second Five Year Plan making possible the expansion of existing medical colleges and the establishment of new ones. A sum of Rs. 3,103·6 lakhs was allotted for this purpose, of which Rs. 1,425·16 lakhs were earmarked for expenditure by the States, Rs. 1,150 lakhs for Centrally aided projects and Rs. 528·5 lakhs for the purely Central ones. For other items like teaching facilities in attached hospitals, increase of facilities for dental education by establishing colleges and expanding existing ones, and for other training programmes including those for training ancillary medical personnel, further sums had to be provided, bringing up the total for education and training in the fields of medicine, surgery and public health to Rs. 4,143·21 lakhs of which Rs. 2,119·71 was the provision in respect of States, Rs. 1,430 in respect of Centrally aided programmes and Rs. 593·5 for Central projects.

Mention must be made of the training of ancillary health personnel which was included in the education and training programme. This had to be accelerated even more than that for doctors because there was a much greater disparity here between existing personnel strength and the strength projected under the second Five Year Plan. In 1950-51 the number of nurses, including auxiliary nurses and midwives, was 17,000 and the need in the India of 1961 was 80,000. The target figure for 1955-56 was 22,000

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and this had already been passed by the end of December 1955 when we had 23,971 nurses on the registers. Similarly over 8,000 midwives had been trained by the end of the First Five Year Plan adding to the original figures of 18,000. The number of health visitors had increased from 600 to 810 and of nurse-dais and dais from 4,000 to 6,826. The number of institutions for training nurses increased from 141 at the beginning of the First Five Year Plan to 324 at the end, the number of training institutions for midwives from 156 to 259, for health visitors from 8 to 12 and for nurse-dais from 11 to 39. The number of pupils under training showed an increase in the case of nurses from 1,432 to 2,030, of midwives from 1,559 to 2,170, of health visitors from 71 to 120 and of nurse-dais and dais 741 to 2,070.

Practitioners of the Indigenous and Homeopathic systems of medicine were mostly to be found in the rural areas and were able to mitigate to some extent the hardships caused by the paucity of doctors. Unfortunately, a very large number of these practitioners had not undergone any standardised course of training nor had their qualifications been scrutinised and approved by any institution entitled or competent to do so. The efficiency of a considerable number of these practitioners and the efficacy of their prescriptions were both of doubtful value. True, practitioners who were really trained and qualified filled a lacuna and deserved encouragement, both in the interest of general medical relief and in the interest of the advancement of Ayurvedic, Unani and Homeopathic medicine. The Central Health Ministry discussed this with the States in the meetings of the Central Council of Health and with the Planning Commission. As a result, a place could be found for the scheme for the development of these systems in the two Five Year Plans. In the first

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plan a sum of Rs. 37.5 lakhs was sanctioned of out which the Jamnagar Institute was given a substantial grant for the development of Ayurvedic medicine and over Rs. 3 lakhs were paid out for research in the Ayurvedic and Unani systems. The Second Five Year Plan was more ambitious and provided Rs. 5½ crores for expenditure by the States and one crore by the Centre, on the development of systems other than that of modern medicine. The plan provided for expansion of the research centre and the post-graduate Institute at Jamnagar, the opening of five Ayurvedic Colleges, and the expansion of 13 existing ones. There were only 255 Ayurvedic dispensaries and under the Second Plan 1,100 more dispensaries, herbaria, aushadhalayas are to be established. This expanded programme is expected to put qualified practitioners of the indigenous systems of medicine in the field, thus augmenting considerably the strength of qualified medical personnel practising in India.

Apart from this there were other fields in which trained personnel would be required for work like medical research and public health engineering. While in the First Five Year Plan only Rs. 12 lakhs was allocated for medical research, in the Second Plan we have an allocation of a very high order. In sanctioning Rs. 4.12 crores for research, the Planning Commission has placed great emphasis on the development of research in every aspect of preventive and curative medicine in India. A new research cadre is now being created which will absorb the existing staff and recruit fresh workers, able to devote their entire time to medical research. The programme also includes the new idea of broadbasing research by utilising teaching institutions where research units will be given full play and talent selected from promising undergraduate and post-graduate workers. An Institute of

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Biology, an Institute for Research into Occupational Health and an expansion of the Virus Research Centre are three important projects included in the Second Plan.

Even though Public Health Engineering was given a high priority in the first plan, it was not found possible to allot any large funds or to draw up a comprehensive plan for its development in India. In the second plan, however, Public Health Engineering has been accepted as an important factor in all health and water supply and sanitation projects and a provision of Rs. 50 lakhs has been made for providing training facilities for public health engineers, overseers and sanitary inspectors and others who will have to man this side of environmental hygiene.

For carrying out operations for the control of malaria, tuberculosis and other communicable diseases the personnel of the control unit had to have specialised training. This was undertaken by the bodies organising these operations. For instance, the Malaria Institute of India, held 18 classes from April 1953 to March 1956 and turned out 105 Medical Officers for Malaria Control, 16 Entomologists, 430 Inspectors, 14 Engineers and 21 Laboratory Technicians. Under the Second Five Year Plan, the expansion of the training programme is in keeping with the increase in tempo of the Malaria Control Operations. By 1961, approximately 150 malaria officers, 150 entomologists, 600 malaria inspectors and 150 public health engineers are expected to be trained. Needless to say, when the contemplated eradication programme takes positive shape the specialised training programme for personnel will also have to be stepped up to cope with the additional work. Similar training programmes were also undertaken in respect of other control units.

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Simultaneously with the steps to effect an increase in the number of doctors and other medical personnel, the expansion of medical facilities in urban and rural areas had to be taken in hand. In 1951 there were 3,600 hospitals and dispensaries with hospital accommodation of 1,13,000 beds. The First Five Year Plan projected an increase of 16 per cent in institutions bringing an increase of 10 per cent in beds, making a total of 1,25,000 beds available to the public. The target was achieved. In the Second Five Year Plan, however, the target fixed was 12,600 institutions and 1,55,000 beds—an increase of 26 per cent and 24 per cent respectively by 1961. Of the allocation of Rs. 3,926.56 lakhs made for this purpose 95 per cent was for expenditure by the States, the balance to be spent directly or indirectly by the Centre.

The training of doctors and of ancillary personnel and the establishment of static hospitals and dispensaries requires time, but the needs of the people in rural areas were urgent and brooked no delay. A start had to be made to provide facilities in these areas without waiting for the time when doctors could be induced to settle in the mofussil or medical institutions could be provided there. The problem now was to find out how best medical and health programmes could be promoted and for this advantage could be taken of the National Extension Blocks run by the Community Project Administration. Primary health centres and health units could also be started

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independently in other areas which were not included in the C.P.A. programmes. Government gave this a high priority and started the ball rolling by establishing primary health centres in some of the community project areas and by establishing eight demonstration rural health units and a few primary health centres in the States of Delhi, U.P., Bombay, Mysore, Madras, Hyderabad, Andhra, Travancore-Cochin and West Bengal. In the First Five Year Plan a sum of Rs. 50 lakhs had been allotted for the purpose of assisting the National Extension Service Blocks in organising primary health centres. Each centre, it was expected, would cost Rs. 23,000 of non-recurrent and Rs. 37,000 recurrent expenditure. It was understood that the non-recurrent expenditure would be borne in full by the Centre and the recurrent expenditure by the State Governments on a sliding scale. Out of this allotment only Rs. 20 lakhs could be utilised for the 70 centres and the 725 primary units established by the end of the First Five Year Plan period. As an additional measure, health surveys were conducted in certain community projects. A sum of Rs. 5 lakhs was provided to the States of Tripura, Manipur and Kutch for providing mobile health units.

It was a small beginning, but it held out great possibilities, as considerable experience was gained in the matter of establishing and running both static and mobile units and in organising rural health programmes generally. The Second Plan was larger in scope and the funds allotted were relatively large, provision having been made for an expenditure of over Rs. 1,963 lakhs by the States and of Rs. 174 lakhs by the Centre. The health units were to provide essential services like institutional and domiciliary medical care, preventive medicine, maternal and child health, health of school going children and the control of

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communicable diseases. Other items were environmental hygiene and health education and, in particular, the family planning programme and vital and health statistics.

As a first step, it was decided that a larger number of doctors and health workers should be brought into the rural health programme by the basic inducement of more attractive conditions of service. They were not to be allowed private practice but a compensatory allowance should make up for any probable loss on this account. In their early stages the specialised national programmes for the control of malaria, filaria, tuberculosis, venereal diseases and leprosy, were to be worked on a cooperative basis by the health personnel of the Extension Blocks and by the National Control Units; but, after a certain stage, when control operations were proved to have reached the maintenance stage, the work of the control units could be integrated with the health units in the Extension Blocks. With the provision of transport facilities, the health unit would also be able to cover a wider area and eventually make medical relief and health programmes more broad-based. The Second Plan projects the establishment of 3,000 such health units in the National Extension and Community Projects and in other areas. The Plan also envisages the conversion of 131 dispensaries run by the States into primary health units, with secondary health units carrying out work further afield. Maternal and child health services had, even before the First Five Year Plan, engaged the attention of the State Governments who had variously developed such services. There were 1651 maternity and child health centres in 1951 and it was proposed to add another 299 centres under the First Five Year Plan. In all, 201 centres were opened by the end of 1955 in the villages and in the backward areas of Part 'C' States at a cost of Rs. 20.5 lakhs. Another sum of Rs. 45

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lakhs had been provided for the establishment of a Maternal and Child Health Training Centre at the All-India Institute of Hygiene and Public Health, Calcutta, out of which nearly Rs. 30 lakhs had been spent by the end of the First Five Year Plan. A number of nurses and others were also trained in pediatric nursing and maternal and child health at the Delhi Centre. In the Second Five Year Plan, maternal and child welfare has been integrated with the primary health centres. A small provision of about Rs. 3 crores for the States and 45 lakhs for the Centre has been made by the Second Five Year Plan for maternal and child welfare projects which could not legitimately come under the generic term 'health centres' and units. School health, which too should be grouped under the general health programmes to be run by the health centres has also not been separately treated except to a small extent of Rs. 1.3 crores meant for specific purposes.

One of the factors in the large scale incidence of disease in India was the low level of resistance caused by inadequate nutrition. The Indian diet was not adequate either in quantity or in quality and led to nutritional deficiency of one sort or another, rendering the people more prone to disease and hence economically less productive. In the First Five Year Plan, accent was on the production of cereals so that an adequate intake of food could be assured. In the Second Five Year Plan, however, emphasis has been laid on the production of protective foods such as milk, eggs, fish, meat, fruits and green vegetables. The greatest need in the matter of protective food is felt by vulnerable groups mostly consisting of expectant and nursing mothers and children of all ages. For such as are unable to provide themselves with these, Government had made arrangements for distribution of milk powder and codliver oil and vitamins. With varying types of diet

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prevalent in different parts of the country, a standardised diet for the whole of the country could hardly be a feasible proposition. It was, therefore, left to the Indian Council of Medical Research to conduct surveys and research in nutrition problems in the National Extension and Community Development Areas and elsewhere. These surveys would cover such subjects as protein malnutrition, the growth and physical development of children, the control of nutritional deficiency diseases and clinical nutritional research. On the educative side, it is proposed to open diet kitchens in hospitals and to establish nutritional laboratories and museums. As a large part of the expenditure in this respect was covered by the allocation to research, it was not thought necessary to provide anything separately for the Centre and only a small provision of Rs. 18.22 lakhs has been made in respect of expenditure by the States.

Medical relief, health programmes, disease control operations, all require material and equipment and Government knew that as far as possible the country would have to be made self-sufficient in respect of these. Institutes had been established earlier in India for research and for the manufacture of vaccines and sera. The Central Research Institute at Kasauli, the Haffkine Institute run by the Government of Bombay State were two such important institutions established earlier. While these had a large amount of pioneer work to their credit, their own growth was not in keeping with the country's growing needs. Not only was an expansion of these institutions necessary but the establishment of new ones was also indicated.

Of the new projects taken in hand since 1947, the BCG Laboratory at Guindy, Madras, was one of the most

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important. This laboratory was opened in 1948 and has since manufactured both BCG vaccine and purified tuberculin. It serves not only to meet India's needs, but also those of some South Eastern and Mid-Eastern countries. The growth of this institution is symbolic of the country's new essay into attaining self-sufficiency in the matter of medical and ancillary supplies. Under the First Five Year Plan, a sum of Rs. 9.23 lakhs was earmarked for the development of the BCG laboratory and served to put it firmly on its feet. In the Second Five Year Plan, no great provision was needed, and a sum of Rs. 3 lakhs was allocated for the specific purpose of acquiring a dry-freeze plant, the use of which will solve storage and transport problems.

The Central Research Institute at Kasauli which originally concerned itself with the manufacture of anti-rabic and a few other vaccines has taken up in the last eight years the investigation of various other problems of importance in our public health programmes. A new plan was initiated which allowed for the expansion and for the housing of the Anaerobic and Rabies Research Centre and also for the provision of essential equipment like air-conditioning, central heating and low temperature incubator plants. Under the Second Five Year Plan, Rs. 1.68 lakhs have been provided for the provision of equipment and for the construction of the animal house, the serum concentration block, a constant temperature room and a yellow fever vaccine block.

The various health programmes and disease control operations require a large scale use of insecticides. For example, malaria control operations consume large quantities of DDT or like insecticides. It is estimated that approximately 10,000 tons of insecticides are needed per year for

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the malaria control programme. It was felt that some large scale attempts should be made for their manufacture in India and a start was made when, in co-operation with the Ministry of Production and with assistance from international bodies, a plant for the manufacture of DDT was established at Delhi at a cost of about Rs. 43 lakhs. The plant's present output is 700 tons and the capacity allows for an increase to a maximum of 1,400 tons per annum. Up to July 1956, the plant had produced 440·86 tons of DDT. A second DDT factory is under construction at A'waye with a production capacity of 1,500 tons. In addition to this, private enterprise has been responsible for the creation of two more factories, one at Rishra near Calcutta and the other at Mithapur, Bombay. These will produce BHC, another insecticide which can be used in place of DDT. These two plants are expected to produce a BHC equivalent of 1,500 tons of DDT. Our present need for insecticides is met mostly by imports, but with the increased production of 4,900 tons per annum by 1959, we shall be able to meet our annual requirement of 5,000 tons for the maintenance stage of both the malaria and filaria control operations.

Penicillin, which is largely used both in therapeutics and in preventive medicine, is also very largely used in control operations like those of venereal diseases. It is now being manufactured in India. A Government factory has been established at Pimpri in Bombay State for its manufacture and this is expected to help India to reduce considerably the import of this anti-biotic from abroad.

The Central Health Ministry also runs four medical store depots at Bombay, Madras, Calcutta and Karnal. These depots satisfy the civil medical requirements of the Central Government and of the various State Governments. Originally established with the idea of supplying the

normal needs of indentors like hospitals, dispensaries and other medical institutions run by the Central and State Governments, they are nearly always called upon to effect emergent supplies as happened in the case of the sudden demand from refugee camps in the immediate post-partition period. These stores provide a ready agency for the supply of medicines, other medical needs and equipment to meet the requirements of medical relief operations in flood and earthquake affected areas.

The depots are organised on a regional basis. The Medical Store Depot, Calcutta not only supplies the States of Bihar, Orissa, Vindhya Pradesh, Tripura and Manipur but also other Central Government and Railway medical institutions in the area. The depots also handle supplies from foreign agencies like W.H.O., UNICEF, TCM and others. The depot at Bombay, though primarily designed for effecting supplies to civilian medical and health institutions, has also in many cases manufactured and supplied medical stores to the Defence Services against demands placed by the Director General, Armed Forces Medical Services. The Central Stores Organisation has played a very useful role in manufacturing where necessary, obtaining and maintaining medical supplies and equipment and attending to their storage and distribution. Though some State Governments have lately started their own medical stores organisations and there has been some hesitancy on the part of others in availing themselves of the services rendered by the central medical depots, most of the States are anxious to see that these central depots continue to function as heretofore with procedural modifications made necessary by present-day conditions.

On strategic considerations, international co-operation is an important factor in our all-out war on disease. India,

as a member of the different United Nations organisations and specialised agencies, has contributed to their funds and rendered other services. In return, India has shared in the various schemes launched and promoted by these bodies. For example, India has been able in the past to manufacture and ship large quantities of smallpox, BCG, plague and other vaccines to neighbouring countries where epidemics were either raging or threatened. India likewise has received considerable support in her First and Second Five Year Plan projects by way of material, equipment and technical know-how. During the past nine years, a number of agreements were signed with the World Health Organisation, the United Nations Children's Fund, the U.N. Technical Co-operation Mission, the Colombo Plan countries, the United States Technical Co-operation Administration, the Rockefeller and Ford Foundations, the International Tuberculosis Campaign, the Government of Soviet Russia and others. Though every effort was made to rely as far as possible on our own resources, the very scope and magnitude of the two plans rendered outside aid necessary and the agreements entered into were for the minimal of external assistance required for the efficient prosecution of the new schemes.

Another field, in which international co-operation is of the utmost importance, is the prevention of the transmission of disease from country to country. India is a party to the International Convention in this regard and possesses an efficient Port Health Organisation. Considerable material is now available on how plague in 1898 and influenza in 1918 in their most virulent forms invaded India. The present day Port Health Organisation presents an effective barrier against such infiltration of disease into India and this is one of the most important steps in the prevention of disease. How strict this organisation is,

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can be gauged from the fact that during the year even the present Speaker of the Indian Parliament was quarantined for not complying with the health requirements for entry into India!

Operational Strategy

Once plans had been completed for the mobilisation of manpower, material and munitions and for the building up of bases, Government could safely move on to the planning of operational strategy in the war against disease. The general build-up of health in the country and a widely distributed provision of medical relief was implicit in all the blueprints, but their object would have been defeated unless the question of the control of the more important communicable diseases was faced squarely. It was important because these diseases did not carry away people by tens and hundreds but in tens of thousands and by lakhs. The diseases which necessitate large scale control operations are malaria, filaria, tuberculosis, leprosy and venereal diseases.

Let us take malaria first. The ravages of this disease were so extensive that in 1947 one would certainly have placed it as India's enemy No. 1. Various surveys had been conducted in the past and steps had also been taken from time to time to mitigate the effects of this disease on the people. These steps were confined mostly to the therapeutic and prophylactic use of cinchona bark, quinine, mepacrine and other medicines. Measures had also been undertaken to destroy the breeding places of the carrier of the disease, the anopheles mosquito. But as neither the one nor the other had shown any marked effect on the malarial morbidity or mortality rates, it became necessary

to think in terms of large scale control operations if any tangible results were to be attained in the attempts to lower its incidence. These control operations mostly consist of extensive and intensive anti-mosquito measures. Great attention was paid to these measures even in the First Five Year Plan. A crore and a half of rupees was sanctioned for the malaria control scheme and it was expected that about 3 crores of people would be afforded protection. Though the target was only 125, the malaria control units allotted in the second year of operation numbered 162, and worked in various parts of the country. Of these no less than 84 units had been operating for over three years. In the areas covered by these units there has been an appreciable reduction in the incidence of malaria. In the post-partition India, it was estimated that about 75 million persons suffered from Malaria. In the four years from 1947 to 1951 as a result of the various pilot schemes for malaria control the morbidity had been reduced to about 60 million. But the full-fledged control programme had a tremendous effect on the incidence which can be seen from the fact that the activities of the Control Units results in a drop from 60·7 lakhs cases to 19·3 lakhs within three years of the commencement of the operations. The insecticide used was DDT. While resistance to DDT does not appear to have developed in this country among anophelines, culicines appear to have become to a certain extent less susceptible. The experience of some other countries, which must be treated with respect, is that both anophelines and culicines show reduced susceptibility to insecticides after a time. The time schedule for malaria control operations must, therefore, be so arranged that such a disease in anopheline susceptibility is not allowed to outrun the programme which must be accordingly accelerated. The Indian Council of Medical Research is enquiring into this problem and their findings may greatly help in fixing the

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target dates for the completion of each phase of the malaria control operations.

In the Second Five Year Plan, provision has been made for the units to be brought up to 200, a number which will cover about 200 million of the exposed population. Provision has also been made for the operational phase to be extended to five years instead of its being three years. After that it will only be a matter of the operations passing into a maintenance phase, with the possibility of a gradual reduction in the intensity of operations. For this the total provision in the Second Five Year Plan is of the order of Rs. 28 crores. This was one of the prime health measures in the First Five Year Plan and the logical intensification of the operations was carried over into Second Plan. The marked success attending the control operations has encouraged Government to further effort, and a plan for a 'Malaria Eradication' programme is being favourably considered.

Though the incidence of filaria cannot be compared to that of malaria or tuberculosis, it is a disease which holds the sword of Damocles over the heads of the 25 million people who live in these endemic areas which include large tracts in Andhra, Assam, Bombay, the former Hyderabad State, Madhya Pradesh, Uttar Pradesh, West Bengal, the Andamans and the Nicobars and the French Settlements. To assist the State Governments to fight this disease, a National Filaria Control Programme was initiated in 1955-56. Thirteen control units and 22 survey units were put in the field at a cost of Rs. 19.29 lakhs in the period 1955-56. All the affected States, with the exception of Assam, agreed to join the national programme. A survey covering over 8 million people was conducted and mass therapy was carried on in some States resulting in

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the administration of the specific drug dimethylcarbamyl methylpiperazine-hydrochloride (Hetrazan) to 3 lakhs of sufferers. Over 75,000 houses were sprayed with Dieldrin. Under the Second Five Year Plan, 65 additional Filaria Control Units are to be established and these, it is expected, will effectively protect the entire population exposed to risk. A sum of Rs. 9.25 crores has been provided under the Second Plan out of which Rs. 2.91 crores is the allocation in respect of States.

Tuberculosis, India's national enemy No. 2, has in the past received considerable attention both from the Central and State Governments and from private institutions. In the First Five Year Plan, a little over Rs. 4.3 crores were allotted for tuberculosis control schemes, for conducting BCG vaccination, for establishing T.B. training and demonstration centres, clinics and domiciliary services, for providing beds for isolation and treatment and for carrying out aftercare and rehabilitation measures. BCG vaccination was introduced in India in 1948. After a small beginning, the programme gathered momentum and the end of the First Five Year Plan saw over 70 million persons tuberculin-tested and 24.5 million vaccinated with BCG. With the population scattered in the villages which are particularly virgin soil for T.B., clinics with arrangements for domiciliary treatment have more to recommend them than costly hospitals and sanatoria. During the course of the First Five Year Plan, 166 such clinics were opened. In the Second Five Year Plan it has been proposed to increase the number of clinics by 200. Important measures that find a place in the Second Plan are model tuberculosis centres for teaching and demonstration, preferably attached to medical colleges; simply designed and cheaply constructed isolation hospitals for dealing with cases living in crowded areas and unhygienic homes; after-

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care and rehabilitation centres for those who have recovered from T.B. These will mean an addition of 4,000 beds for tuberculosis patients and of 10 aftercare and rehabilitation centres. Three T.B. Demonstration and Training Centres have been located at New Delhi, Patna and Trivandrum. Their work is divided into four sections, an epidemiological section for finding out new cases by X-Ray survey; a BCG Vaccination section; a bacteriological section; a clinical section for diagnosis and treatment; and a domiciliary service. Two more centres are being established at Madras and Nagpur and the end of Second Plan will see an addition of ten more. The total allocation in the second plan for T.B. control schemes which have now been elevated to a national control programme is in the region of Rs. 13 crores of which nearly Rs. 5 crores will be the Centre's contribution. Other steps taken in furtherance of T.B. control in the First Plan were the upgrading of the Vallabhbhai Patel Chest Institute of the Delhi University for D.T.D. and M.D., M.Sc., Ph.D. courses. A research centre in T.B. control was also projected under the Second Plan.

Leprosy is another deadly disease and it is estimated that about 15 lakhs of persons are its victims. Few medical facilities exist for the sufferers and while public interest is high, there is little coordination between the efforts of various agencies devoted to the same cause. Under the First Five Year Plan, a Central Leprosy Teaching & Research Institute was established at Chingleput, Madras. This showed the green light for taking in hand the "National Leprosy Control Programme". Firstly, there were the study and treatment centres which conducted research and evaluation and secondly there were the subsidiary centres for survey, case finding and treatment by sulphone therapy. The First Five Year Plan had allowed for the establishment of four research and treatment

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centres and 36 subsidiary centres. Under the Second Plan, a further 88 subsidiary centres are proposed to be opened with provision for isolation facilities. Centres for correction of deformities and for rehabilitation work are also to be established. The total provision for leprosy control in the Second Five Year Plan amounts to Rs. 4 crores.

Venereal diseases present an acute problem. For one cause or another people are reluctant to undergo treatment with the result that the incidence of this group of diseases has a tendency to spread out and even be unconsciously transmitted to future generations. The new blueprint for V.D. control consists of epidemiological investigation, educative propaganda amongst patients and follow up. A main objective is the prevention of transmission of syphilis to progeny by serological screening and, where necessary, treatment of every expectant mother. Such examination has revealed the high incidence of this disease which is placed at between 5 to 8 per cent of the population, the rate being higher in cities than in villages and hamlets.

The Central programme is divided into three distinct but inter-connected parts, curative measures, epidemiological surveys, and a programme of educating both the infected and the free in the causes and methods of prevention of the disease. Under the Second Five Year Plan, the State Governments are to receive an aid of Rs. 80·62 lakhs in the shape of penicillin equipment and funds. A small allotment of Rs. 2·5 lakhs for the Centre, will go for meeting the costs of its advisory and co-ordinative and administrative functions in this field.

These are the main communicable diseases which stand in need of integrated control programmes. There are

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others like plague and cholera, which are still endemic, but have been controlled to the extent which would have been considered amazing some decades ago. These diseases, fortunately mostly a thing of the past, had a quick onset, short duration and a high mortality. The communicable disease for which national programmes have now been initiated are of another order altogether. They are insidious in their onset, have a longer duration extending sometimes over years, incapacitate the sufferer till he becomes a drag on society and a burden to himself, and eventually, more often than not, kill him. Always he is a source of danger to all that come in contact with him. Unlike the raging epidemics such as smallpox, plague and cholera, these others are infinitely more dangerous, because they are not detected in their early stages. The new control programmes strike at the very root of these diseases by destroying the means by which they can be transmitted from man to man.

An important consideration in the prevention of diseases is a proper system of environmental hygiene. The principal factors in a programme of this sort are a pure water supply, effective drainage and proper sanitation. Lack of these lessen the efficiency of measures for the control or eradication of disease. Impure water and bad sanitation provide not only the foci of endemic diseases but also the carriers. Though their importance was recognised in the First Five Year Plan, no great provision was made for sanitation and water supply schemes. About Rs. 24 crores were allotted to the States for the supply of a protected urban and rural water supply. The States had in hand 168 urban water supply schemes in 1954-55, while in the rural sector 21,256 wells were either renovated or newly sunk. Perhaps in the "restricted economy" of the First Plan little more could be expected. In the beginning of 1955

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a national water supply programme was initiated by the Central Government for providing 150 urban areas and 10,000 villages with a proper and safe water supply. A survey was made of the national requirements and it was calculated that the cost of water supply and sewerage in urban areas would come to about Rs. 70 per inhabitant. In the case of villages it would be about Rs. 15 per inhabitant for both water supply and sanitation. The total funds required for this purpose are so high an order that they could not be encompassed within the period of two plans and would therefore have to be spread over several of them. A graduated scale of expenditure was, therefore, worked out for four Five Year Plans and, as a result, in the Second Plan nearly Rs. 89 crores have been provided for water supply and sanitation both urban and rural, over Rs. 55 crores being directly controlled by the States. The Rs. 34 crores allotted to the Centre, are for giving the States further assistance in respect of their sanitation and water supply schemes.

This brought to the fore another important consideration, the paramount need for a scientific and rational approach to the problems, which only qualified public health engineers could provide. This was discussed at the meetings of the Council of Health, and it was agreed between the Centre and the States that public health engineers should be attached to the Directorates of Health in the States. During the First Plan, public health engineering organisations were started but were woefully understaffed for lack of trained personnel. A provision of Rs. 50 lakhs was therefore made in the Second Plan for training facilities for them so that, by the end of 1961, a lot of leeway could be made in this respect. Even a small beginning with a sanction of Rs. 4 lakhs for 1956-57 will mean the training of no less than 30 public health engineers, 200 engineering subordinates, 100 water workers and sewage plant operators and 150 sanitary inspectors for this specialised work.

C A M P A I G N S A N D O P E R A T I O N S

Reconnaissance and Intelligence

In formulating strategy for the successful prosecution of any war, very great importance is always attached to intelligence and reconnaissance. This is true in an equal degree of a total war against disease where medical research programmes and health surveys take the place of reconnaissance and intelligence. This work is now centralised and conducted by a body called the Indian Council of Medical Research, behind the facade of whose academic sounding name stands a small army of enthusiastic but practical research workers who, like their fellow workers in other parts of the world, are trying day in and day out, year in and year out, to find out the whys and wherefores of all communicable and nutritional deficiency diseases and of many others caused by the stress and strain of life in this dynamic age. It is they that endeavour to find out ways and means of keeping untimely death at bay. Though it touches the health and well-being of every man, woman and child in India, their work is little known to the lay public for they seldom, if ever, seek the limelight; but their work is very much in evidence wherever a doctor treats a patient, wherever a surgeon performs an operation, wherever large scale control operations are in progress to fight epidemic or endemic disease and wherever health and hygiene methods are to be tested on the anvil of efficiency and utility. On the researches conducted by these scientific medical workers is built up the edifice of modern

medicine and surgery and of health and hygiene procedures. The task that this Council has undertaken and completed in the last nine years and has projected for the Second Five Year Plan is of an order, the magnitude of which can only be appreciated if viewed in its historical perspective.

Medical research started on a small scale some time ago in India when sporadic efforts were made in the latter half of the nineteenth century to study the incidence and spread of cholera and malaria. The early work in this field was done by Cunningham and Lewis on these two diseases as long ago as 1869. Lewis worked on trypanosomes and filaria; Vandyke Carter on spirilla leprosy and mycetoma; Macnamara on cholera; and Fayrer on snakes and snake venoms. Towards the end of the nineteenth century the Government, encouraged by the results of these isolated efforts decided to expand investigations to include kala-azar and beri-beri. Haffkine, after whom the Haffkine Institute at Bombay is named, was asked specially to study the efficacy of prophylactic inoculation against cholera in Bengal and against plague in Bombay. As a result a Plague Research Laboratory was started in 1899 in the city of Bombay. This was a time resounding with discoveries in communicable diseases. The work of Pasteur and Koch had attracted world-wide attention. A further impetus to the study of communicable diseases was given by Sir Ronald Ross's historic discovery a couple of years earlier of the real culprit in the transmission of malaria, from the affected to the unaffected, a discovery which paved the way not only for the control of malaria, but also for the creation of a body to conduct special studies in the cause and spread of infectious diseases and the periodical eruption of endemic diseases into epidemics. The Pasteur Institute was also established in 1900 at Kasauli in the Simla hills to

be followed three years later by the establishment of a laboratory at Guindy, Madras, for the manufacture of calf lymph and for conducting bacteriological research. While the enthusiasm of individuals had undoubtedly resulted in great strides in this field, it was evident that the time had come when the task should be entrusted to a specialised group which could work in coordinated and undiluted activity. Towards this end a specialist cadre to man what was called the 'Bacteriological Department' was created. This department which, in its turn, came to be called the Medical Research Department became chiefly concerned with the manufacture of vaccine, sera and other biological products and its personnel became increasingly unavailable for field work which is the basis of all research. The provision of a centralised agency for engaging purely in research thus became a prime necessity. The Indian Research Fund Association was established in 1911 to fill this need. This was maintained as a local Fund administered by the Government of India but later registered under the Registration of Societies Act. Under its new garb it became independent of Government even though high officials both administrative and technical were associated in its management. Its president was the Executive Councillor of the Viceroy's Council incharge of the Health Portfolio and the other members of the Governing Body included the Secretary to the Government of India dealing with the same subject, the Director General of Indian Medical Service, the Public Health Commissioner with the Government of India and the Directors of technical institutions like the All-India Institute of Hygiene and Public Health at Calcutta, the Central Research Institute at Kasauli, and the School of Tropical Medicine at Calcutta. The Legislative Assembly and the Council of States, the Indian Science Congress, the medical faculties of the universities in India

were also represented on the Governing Body.

During the First World War the work of this research association came almost to a stand-still, as Government had to draw largely on the services of its erstwhile workers to shoulder the burdens incident on active warfare enveloping half the world and for some time after the cessation of hostilities there was no pronounced activity in research work. How meagre was the attention given to this vital subject can be gauged from the fact that in the early years of the life of this Association, the Government of India sanctioned an annual grant of Rs. 5 lakhs to enable it to finance the conduct of its enquiries in various fields. In addition there was a capital fund which, at its peak, stood at Rs. 52 lakhs. During the slump year of 1931 the Government of India grant for medical research was discontinued and consequently the Governing Body had to draw on its capital fund. The result was that at the close of the financial year 1937-38 the fund of the Association stood at the low figure of Rs. 32½ lakhs.

Then came the Second World War with further difficulties in the way of obtaining finance and personnel to man research schemes. This global war was followed by a considerably unsettled state of affairs in both political and economic fields and the problems of medical research, like many others in the medical field, were left to vegetate until some stability was attained.

In its report submitted in 1946 the Bhole Committee stressed *inter alia* the necessity for conducting large scale independent research into the incidence of diseases of various kinds in India and in devising control operations based on such research.

With the adoption of its recommendations, the Bhore Committee's report had by 1947 become a sort of *vade mecum* for all those engaged in the administration of health and medical relief problems in India. If, as envisaged in the Bhore plan, research had to take its legitimate place in any plan designed to serve the interests of the public in the fields of medicine and health, it became evident that the scope and activities of the Indian Research Fund Association must of necessity be enlarged and that too to a very great extent.

The two post-war years 1945—47 were lean ones for the Indian Research Fund Association. The moneys placed at their disposal as a grant were Rs. 6 lakhs per year which, with the lower purchasing power of the rupee, meant even less than the original grant of Rs. 5 lakhs per year in the infancy of the Association.

The National Government took office in August 1947 and in the new era that had dawned, research could look forward to a better understanding of its scope and its needs. Though an instant improvement was seen in the Association's budgetary position, the new Government was not to be hustled into any new expenditure without a proper and well considered plan being presented to it. But even the doubling of the grant had served to help vitalise the organisation which could confidently go ahead with the formulation of the various schemes which made up its two Five Year Plans.

At the time the Bhore Committee conducted its enquiry, the Indian Research Fund Association was a body which encouraged research in the fields of preventive medicine and public health by financing promising programmes

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whether by institutions or by suitably qualified individuals. From its inception the Association had been responsible for some of the most successful schemes which have now lost their earlier evanescent character and have become permanent or semi-permanent organisations working in specific fields. The Malaria Institute of India owes its inception to the Malaria Survey of India which was originally financed by the Association. The 'Beriberi Enquiry' later termed the 'Deficiency Diseases Enquiry', which was backed by the Association, developed in due course into a full-fledged group of Nutritional Research Laboratories.

Apart from these, the Association had been financing a number of research programmes submitted by individual workers in various research and teaching institutions and in the universities. These were sanctioned after careful scrutiny by the Scientific Advisory Board and by the Advisory Committees constituted by the Board. Reviewing the work of the Association, the Bhole Committee made the following remarks in 1946:

"Within the limits of the financial resources of the Association, the numerous inquiries which it has financed have done much to bring to light knowledge which has proved of real importance in the epidemiology, mode of transmission, diagnosis, treatment and investigation of many of the more important diseases in India. Inquiries financed by the Association over the past 20 years have also helped to elucidate the resources of the country in regard to the use of indigenous drugs."

The post-Independence period has, however, shown two distinct developments in the field of medical research.

RECONNAISSANCE AND INTELLIGENCE

Not that there was a sudden and radical change either in the affairs or in the activities of the Association as a result of the advent of Independence. But activity became a little more purposeful and greater stability was assured. In the first three years there was a certain amount of stock-taking, consolidation of work and spread of research into wider fields. But there was also an unmistakable trend towards making research more broad-based than before. For instance the total annual expenditure on research schemes had, for a considerable period, hovered around a figure of Rs. 10 lakhs. The comparative lack of fluctuation in the expenditure chart can be attributed to a preponderance of institutional as against individual research. The time had now come when more had to be brought to bear on promising individual research programmes and more enthusiasm infused in those that showed an aptitude for a scientific approach to medical problems. On the one hand the scope of medical research had to be widened and on the other the activity of the Association had to be narrowed down to exclude subjects other than those which could be legitimately encompassed in the generic term medical research.

As a first step towards this objective it was proposed that the Indian Research Fund Association, which was a vague misnomer, should be rechristened the Indian Council of Medical Research and that practically every aspect of medical research should be brought under its aegis. Its functions were thus not to be confined merely to research in the incidence and transmission of endemic and epidemic diseases or in the etiology and mode of transmission of communicable diseases, but to stretch out in all directions and to include every aspect of research in preventive medicine such as the control of epidemic and endemic disease, environmental and personal and mental hygiene

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research in nutrition and drugs, used both in modern and indigenous systems, the modes and procedures to be adopted in population control, and every other subject which in one way or another could influence the reduction of infant and adult mortality, the prevention and amelioration of disablement caused by disease, improvement in conditions which go towards building up, physically and mentally, a sound society. It was realised that every one of these factors played a more or less important part in the onset, progress and the ultimate result of the attack by any disease on a human being and that to ignore one or other factor in a research programme would certainly be fatal to its ultimate success.

The stimulus thus given to medical research was reflected to a great extent in the number of programmes which came before the committee for support.

In 1945-46, sanction was accorded to 13 new research proposals out of the 22 that were received. The corresponding figures for 1954-55 are 36 and 79 respectively. The sanction for the 1954-55 programme for both old and new schemes was Rs. 19.29 lakhs. At its meeting held in 1955, 113 continuation proposals and 121 new proposals were placed before the Board who agreed to the work on 91 of the old schemes being continued and on 76 new ones being started. Of the 167 schemes in progress in the current year 80 are being conducted in medical colleges, 80 in research institutes and university laboratories etc. and 7 in other places, the expenditure involved being Rs. 28.46 lakhs.

All this was to the good but it did not go far enough towards attaining the primary objective of making medical research broad-based. There was considerable untapped talent which could be drawn to advantage into the

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vortex of the plan and it was felt that this talent could certainly be found in Medical Colleges and post-graduate institutions. Encouragement to research amongst this class would undoubtedly yield heavy dividends and the Council felt that this could best be done by adopting a far more comprehensive policy and incorporating it in the bigger Second Five Year Plan. This would also create the right atmosphere for promoting research in teaching institutions which is an essential for the fulfilment of the three objectives, education, teaching and research which so closely dovetail into and feed upon one another.

In the year 1947-48, the Scientific Advisory Board of the Indian Research Fund Association was assisted in its work by ten Advisory Committees in examining the proposals submitted by workers for grant-in-aid from the Association. These Committees dealt with the subjects of Cholera, Malaria, Nutrition, Leprosy, Plague, Clinical Research, Rabies, Filariasis, Industrial Health and Maternal and Child Health. In 1948-49 a Pharmacology Advisory Committee was formed to stimulate and promote research in the field of pharmacology especially in medical colleges. Virus research has of late been gaining wide interest in the country. It was, therefore, considered necessary to widen the scope of the Rabies Advisory Committee so as to embrace in its fold all the virus diseases and in 1951-52 a Virus Diseases Advisory Committee was constituted.

As a result of the reconstitution in 1949 of the Indian Research Fund Association into the Indian Council of Medical Research the scope of work of the Council has been considerably widened. The Council has drawn up an extensive programme for medical research in the Second Five Year Plan. The highest priority has been accorded to research on the problems of environmental sanitation and

communicable diseases. In order to make an integrated approach, two new Advisory Committees *viz.* Communicable Diseases and the Environmental Diseases Committee, and the Environmental Hygiene and Sanitation Advisory Committee were appointed. Advisory Committees on cholera, malaria, leprosy, filariasis were made Sub-Committees of the Communicable Diseases Advisory Committee. The subjects of malaria and filariasis were combined to form a new Sub-Committee with the name Malaria and other Arthropod-Borne Diseases Sub-Committee. A Mental Health Advisory Committee was appointed for the development of research in the subject of mental health. Another Advisory Committee on dental health for fostering research in this neglected field was also formed.

The Indian Council of Medical Research has at present eleven Advisory Committees and fourteen Sub-Committees, besides several working parties which have been appointed by the Nutrition Advisory Committee and the Environmental Hygiene and Sanitation Advisory Committee to finalise and implement various schemes included in the Second Five Year Plan. The present Advisory Committees comprise Clinical Research, Communicable Diseases, Dental Health, Environmental Hygiene and Sanitation, Industrial Health, Maternal and Child Health, Mental Health, Nutrition, Physiology and Pharmacology, Research on the Physiology of human reproduction and Virus Diseases. Sub-Committees have been appointed to deal with the specific subjects of Cardio-Vascular Diseases and Hypertension, Haematology, Liver Diseases, Therapeutic Trials, Cholera, Leprosy, Malaria and other Arthropod-borne Diseases, Tuberculosis, Venereal Diseases, Nutrition Survey, Evaluation of Nutrition Status, Protein Malnutrition, etc.

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Thus was launched the Second Five Year Plan. In the First Five Year Plan an *ad hoc* grant of only Rs. 12 lakhs had been given to the Council in addition to the annual grant of 12 lakhs. While this was inadequate for the needs of an expanding programme, it was sufficient incentive to those who were primarily concerned in the drawing up of the Second Plan in which an estimated budget expenditure of Rs. 412 lakhs was provided for. The totality of the needs of the augmented programme were classified, sorted out and funds allocated in relation to the importance of the project and the needs of incidental research. The important projects for which high allocations were made were research on T.B. control measures, nutrition, environmental sanitation, maternity and child health problems, drug research and other fundamental programmes, involving an expenditure of Rs. 105 lakhs. No less than Rs. 28 lakhs were proposed to be spent on research schemes in relation to nutritional health programmes. Capital grants for the establishment of the Institutes of Biology and Occupational Research, the upgrading of the Virus Research Centre to the status of an Institute and for the development of the Nutrition Research Laboratories amounted to approximately Rs. 119 lakhs. A sum of Rs. 20 lakhs was earmarked for stimulating and developing research in medical colleges and in teaching hospitals.

All these figures however do not include the main allotment of Rs. 125 lakhs to be given as an annual grant to the Council to be treated as a standing charge and to be utilised for the development of medical research in general which will also include the promotion of research programmes in medical institutions, for fellowship programmes and for miscellaneous items of research not listed under any of the other heads.

A most heartening feature of the Second Five Year Plan is a greater appreciation of the needs of the research worker as apart from research work. The enthusiasm of these dedicated workers knows no bounds. But in spite of the importance of their work, research is the cinderella of all professions. In the past, research has suffered to some extent by the policy adopted of making in some cases *ad hoc* grants for specific projects and in others by drawing on the permanent cadre of medical men for specific enquiries, only to return them to their normal duties after the expiry of the time for which their services have been obtained.

The medical scientist engaged in research undoubtedly gets a quantum of recognition but only when outstanding discoveries like that of 'penicillin' catch the public imagination. But the myriad chores and routine investigations, which are the lot of the research worker and which together make the sum total of all progress, remain unrewarded and unrecognised. It is true that man does not live by bread alone but it is equally true that man must have bread to live. It is in this context that the decision to create a separate medical research cadre on a permanent basis is to be specially welcomed. This will go a long way in giving an additional fillip to research in medical and public health problems. Under the new proposals the medical scientist and the research worker will enjoy the status of a university teacher and will be able to give his undivided attention to the problems of medical research in India. The proposed research cadre is a flexible one, and sufficiently broad-based to include workers in all the branches of medical science including biophysics and statistics. The cadre will be formed in the immediate future with the existing staff and will later absorb promising workers with an original bent of mind without their having to wait for a possible vacancy.

Intelligence Shapes Tactics

Research, like intelligence, is not an end in itself; it is only a means to end. When campaigns and battles are planned, it is on the basis of intelligence. When campaigns against disease are planned it is on the basis of scientific knowledge, the result of empiric research through the ages. Just as intelligence in modern warfare allows us to plan our steps ahead so that enemy objectives can be defeated, medical research allows us to plan out successfully our defensive and offensive action against disease by augmenting our knowledge of their basic causative and propagatory factors.

Today, India has initiated very large schemes for the control and eradication of communicable and deficiency diseases, schemes for bettering sanitation and water supply methods, for bringing into line with modern medicine the ancient systems existing in India, schemes involving hundreds of crores of rupees. Their success depends on the knowledge gained in the past and determination of the conditions under which this knowledge can be applied to conditions in the India of today and of tomorrow.

Let us take the case of malaria. We have launched out on a programme of malaria control operations in India. We have selected certain areas where it is endemic and we have already reduced the total incidence of this disease from 600 lakhs to 200 lakhs within the last four

years. On the face of it, this progress is phenomenal and at the rate of achievement shown so far, malaria should be a thing of the past in less than half a decade. Unfortunately, it is not as easy as all that. Research has proved that there are other angles to the problem. Malarial parasites are transmitted by a particular mosquito acting as carrier. Administrators and scientists alike are greatly perturbed over the experience of different countries which has shown that the mosquitoes against whom the control operations are directed have a tendency to become less susceptible to DDT and other insecticides which are used for the purpose. True, we in India have not been confronted with this development so far, but anticipatory steps have to be taken and a probe has been initiated into discovering the mechanism of the resistance to insecticides developed by mosquitoes exposed to them. The Malaria Institute of India is conducting research on this problem supported, of course, in its research programmes by the Indian Council of Medical Research and the results will indicate if the present control operations have to be accelerated in tempo and, if so, to what extent. And, if an eradication programme is to be taken in hand, what should be its time schedule and *modus operandi*. The results of the research in hand are of vital interest to the Rs. 27 crore Malaria Control Programme which affects the life and well being of the 200 million persons living in those areas where malaria is endemic.

Kala-azar is another disease widely prevalent in India. The Kala-azar Commission encouraged an intensive investigation of the disease. Research workers were able to track down its mode of transmission which for years was a hot bed of speculation. The discovery by the Commission that the sand-fly was responsible for transmitting the disease from person to person has not only revolu-

INTELLIGENCE SHAPES TACTICS

tionized our approach towards its control but has brought success in its wake.

Filariasis and leprosy are also two major public health problems in India. Today we are in a position to think in terms of their prevention largely through the efforts of research. With the availability of chemotherapeutic drugs against filariasis and of insecticides like DDT to tackle the insect vector, the control of filariasis has become a relatively feasible proposition. A considerable amount of work has, however, had to be done to find out the most suitable and effective ways of using these weapons on a mass scale under local conditions. For five years, the Council investigated this problem in a field station in Orissa where filariasis is highly endemic and the rich experience gained from this project has provided a basis for extending the control operations to wider areas during the Second Five Year Plan, eventually covering the entire country and wherever filariasis is prevalent.

In the field of leprosy, the workers of the Indian Council of Medical Research have made fundamental contributions towards the elucidation of how infection with the leprosy bacillus takes place and how it spreads. Side by side, special operative procedures have been developed on scientific lines to afford relief to persons in an advanced state of leprosy. The new remedies which have so radically altered the outlook for the leprosy patient, such as sulphone, sulphetrone and thiosemicarbazone, have been studied in detail and a schedule of treatment has been evolved for usage throughout India under Indian conditions. The results obtained during these studies have indicated the possibility of utilising these drugs in the mass treatment of patients for control

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of the disease in endemic areas. On these researches has been based the recently initiated National Leprosy Control Programme.

Interest in virus diseases is of relatively recent origin although viruses themselves have been taking their toll of human life throughout the centuries. The Virus Research Centre established in 1952 with aid from the Rockefeller Foundation is now conducting large scale research. Workers at this Centre have successfully identified the causative agent of a mysterious type of encephalitis affecting children in South India, which is transmitted through mosquitoes. The Polio Research Unit, Bombay, run by the Indian Council of Medical Research has isolated a number of strains of the virus responsible for polio in Bombay city and has made several contributions to the understanding of its mode of propagation. Research is being carried on in different Centres in India on a number of virus infections, but one project must be specially mentioned as it is of some importance. Trachoma is a virus disease affecting the eyes and can in its later stages lead to serious consequences and may even cause blindness. Indeed it is believed that this disease which has an incidence among 90 per cent of the population in Northern India is a major cause of blindness in this country. A Trachoma Pilot Project has been sponsored and is working in Aligarh district in Uttar Pradesh. Its main aim is to study the factors which cause its spread in the community and to evolve the most efficient, economic and feasible methods of control on a mass scale. The project is now in the early stages of its operation.

In a country where enervating climatic conditions and overcrowding are so widely prevalent, mal- and under-nutrition are of vital concern to the people, and it is but

natural that great emphasis should be laid on active research in this field. The Nutrition Research Laboratories at Coonoor, which were founded by the Indian Research Fund Association, not only carry out research on nutrition problems but also translate the results into practical nutrition work. Besides the laboratories, there are a number of units whose work is devoted entirely to the study of nutritional problems. Nutritional researches cover a very wide field and have made several important contributions to public health. Diet surveys have been conducted in many parts of the country as a result of which we now have a fairly accurate idea of the various kinds of diet consumed by the people, their nutritional values and their defects. Prevalence of nutritional diseases in India and their causation has been studied intensively. Particular mention may be made of the great advances made in India on protein malnutrition. Largely on account of this work, the seriousness of the problem of protein malnutrition, particularly to child health, is becoming increasingly recognised. Cheap vegetable sources of protein are being discovered and developed for its effective treatment and control. Surveys throughout the length and breadth of the country are being conducted to ascertain the precise magnitude of the problem. Great fundamental contributions have been made on the structural and functional effects of protein malnutrition in man and animals. Specific nutritional diseases which are geographical in distribution, such as endemic goitre, lathyrism and fluorosis, are being investigated. A Pilot Project for the control of goitre is in full swing in the Kangra Valley in the Punjab. Fluorosis which leads to crippling deformities of the bones, both in man and cattle, in certain parts of South India, is being investigated with a view to reducing the excessive intake of fluorides through drinking water. The Central Government has

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to a great extent succeeded in stimulating the interest of the State Governments and, as a result, many of them have organised public health nutrition departments in their respective States.

With a mortality of 5 lakhs a year and a morbidity of over 25 lakhs, tuberculosis presents another problem. Hospitalisation and isolation facilities, even under the Second Five Year Plan, can hardly touch the fringe of the problem. Stress has, therefore, been laid on domiciliary treatment of those suffering from tuberculosis. To a great extent, this presupposes that a very large number of those undergoing treatment at home will utilise the services of private practitioners. A number of therapeutic agents are now included in our armoury against the tubercle bacillus, notably Streptomycin, P.A.S. and Isoniazid. But their use is also fraught with some dangers, not to the patient undergoing treatment as such, but to society at large. The tubercle bacillus has been known to develop resistance to these drugs after a time, and consequently there is danger of the evolution of a new resistant type of the bacillus, immune to these very potent antibiotics. This complication would certainly arise if domiciliary treatment were left to itself. Research has, therefore, been initiated into the evolution of the new types of bacilli resistant to modern chemotherapeutic agents. Research is also to be carried out on the optimum dosages of the various antibiotics, the time schedules and correct procedures for their administration. This, it is expected, will ultimately reduce to a minimum the risks inherent in the home treatment of tuberculosis patients. The new schemes for research are to be conducted jointly by the Indian and British Councils of Medical Research with the assistance of W.H.O., and their findings may prove to be of untold value to the success of India's

national programme for the control of tuberculosis.

These are only the most outstanding achievements. But there are many others, small in themselves but which put together make a big contribution to the sum total of our knowledge of diseases, their causes, their modes of transmission, the efficacy or otherwise of many of the remedies, and the discovery of new medicines, therapeutic agents and surgical procedures. The future of preventive and curative medicine is intimately wrapped up with the work of medical research and so is the continued well-being of the people of India.

The Winged Menace

Malaria is India's first and most important public health problem. It is prevalent in the whole country as even a cursory glance at the malaria map of India will show. Over twenty crores of people in the country live in malarial areas and four-fifths of this vulnerable population are concentrated in Assam, Bihar, Bombay, Madhya Pradesh, Uttar Pradesh and West Bengal. With the exception of areas situated 6,000 feet above sea level and one or two strips round Madras city and the west coast and a portion of the Brahmaputra Valley, the country has a history of malaria from low to high endemicity. In these malarial areas, no section of the population is immune from attack. Malaria is a formidable foe not merely on account of the number of deaths it causes, but mainly because of the debilitated condition in which it leaves its victims after an attack. From the point of view of the all round expansion envisaged in our Plans, malaria eradication has thus an important role to play. The National Malaria Control Programme which envisages collaboration between the Central and State Governments was hence launched in the First Five Year Plan with an allotment of Rs. 1.5 crores.

Malaria is carried by vectors. The principal vectors in India are the five species of anopheline mosquitoes viz. *A. culicifacies*, *A. Minimus*, *A. fluviatilis*, *A. sundaicus* and *A. philippinensis*. The disease is actually caused by

THE WINGED MENACE

the malaria parasite carried by these vectors. They breed in stagnant waters, pools and tanks and in sluggish rivers. A two-pronged drive is therefore required in Malaria control, on the one hand the destruction of the malaria parasite in the blood stream of the affected persons and on the other the destruction of the vectors in their breeding places. In the early years under the technical direction of Ross and Manson, anti-larval measures were undertaken for preventing the access to the human body of the mosquitoes; and drugs, like cinchona febrifuge and quinine sulphate, were employed for treatment of the afflicted. The League of Nations Committee on Malaria stated in 1927 that one of the important measures, even from the point of view of prevention of malaria, was the proper treatment of the afflicted. While it gave a fillip to research in antimalarials, it did not, in any way, reduce the necessity of continuing anti-larval measures. Pyrethrum insecticide for space spray was introduced in the country by 1936, though it did not produce the results anticipated.

Towards the end of the Second World War new anti-malarial drugs and insecticides which revolutionised the technique of treatment and prevention of the disease were discovered. These were the drug Paludrine, and the insecticides D.D.T. and B.H.C. They were tried for the first time in the country in 1940. As the pilot projects were successful the idea of a comprehensive National Malaria Control Programme was evolved.

In the preceding para a two-pronged drive is spoken of. Now a three-pronged one sounds contradictory. Anti-larval measures are the normal function of local bodies in the country. The destruction of the adult mosquito and the destruction of the parasite in the blood stream of the victim constitute the two other important measures in this campaign. In view of the great mobility of human

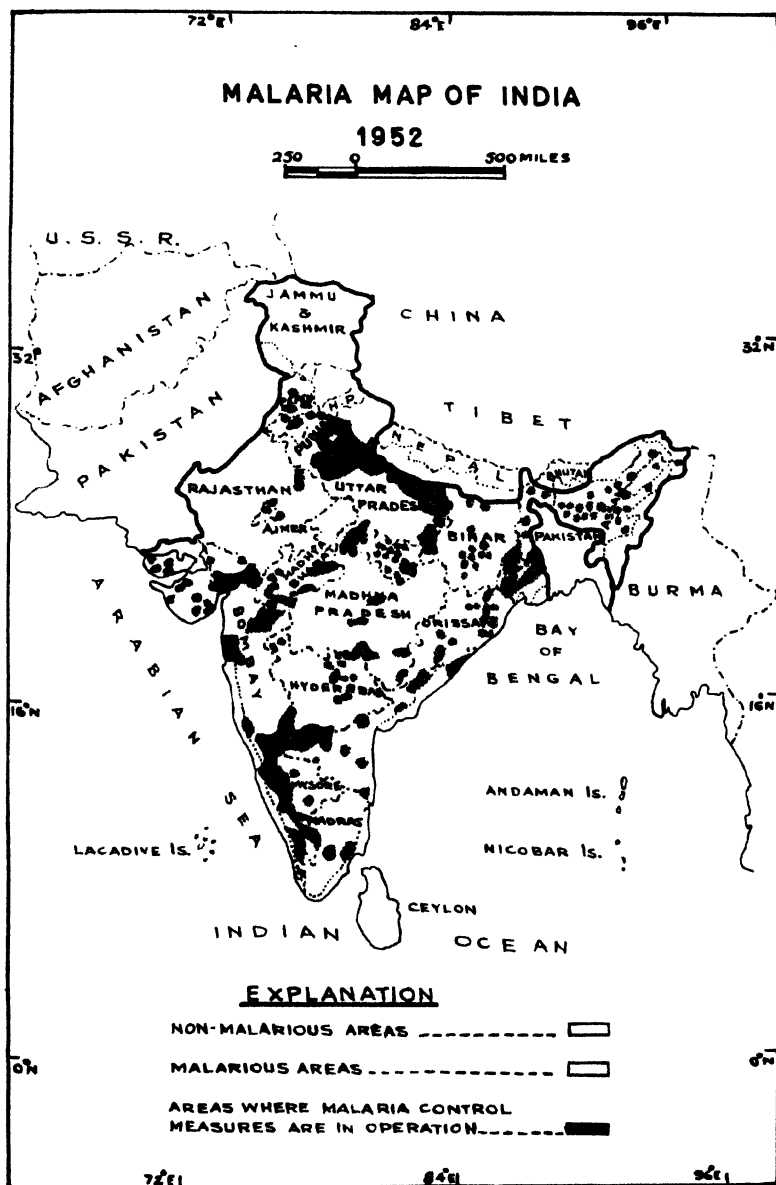
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beings due to quick transit facilities, it is not always possible to localise the disease. Measures for the destruction of the adult mosquito must therefore be undertaken *pari passu* with steps for the destruction of the parasite in the human being and this two-fold task is now being tackled in this country by the Central and State Governments working in collaboration.

The organisation which co-ordinates the efforts of the three authorities is the Malaria Institute of India. It was set up as the Malaria Bureau in 1909 and later called the Malaria Survey of India. Originally financed by the Indian Research Fund Association, (now the Indian Council of Medical Research), it grew from strength to strength. In 1938 it acquired its present name and in 1940 it was taken over by the Government of India. The main functions of the Institute at present are:—

- (1) to advise the Central Government on all aspects of Malaria and its Control;
- (2) to act as adviser to the State Governments;
- (3) to conduct courses in malariology and filariology for the training of medical officers and engineers;
- (4) to disseminate technical information on malaria and filaria, conduct surveys, recommend anti-mosquito and other measures of control; and
- (5) to maintain liaison between the Central and State Governments and malariologists and filariologists of other countries.

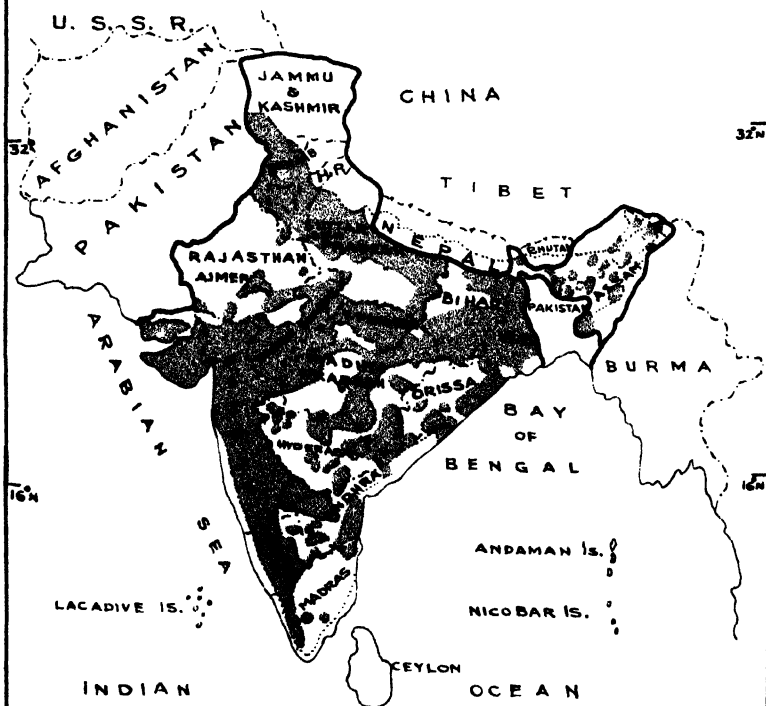
Public Health is doubtless a State subject but a disease like malaria transcends State boundaries. There has,



PROGRESS UNDER THE N. M. C. P.

1954-55

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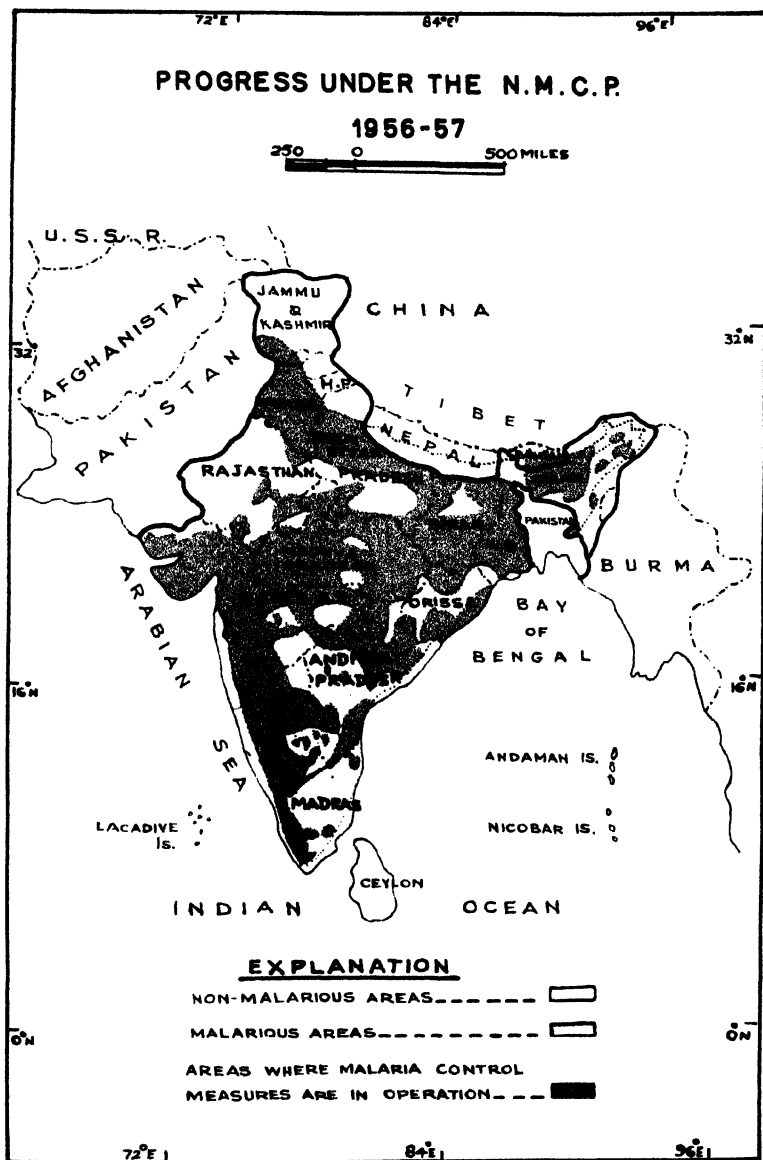


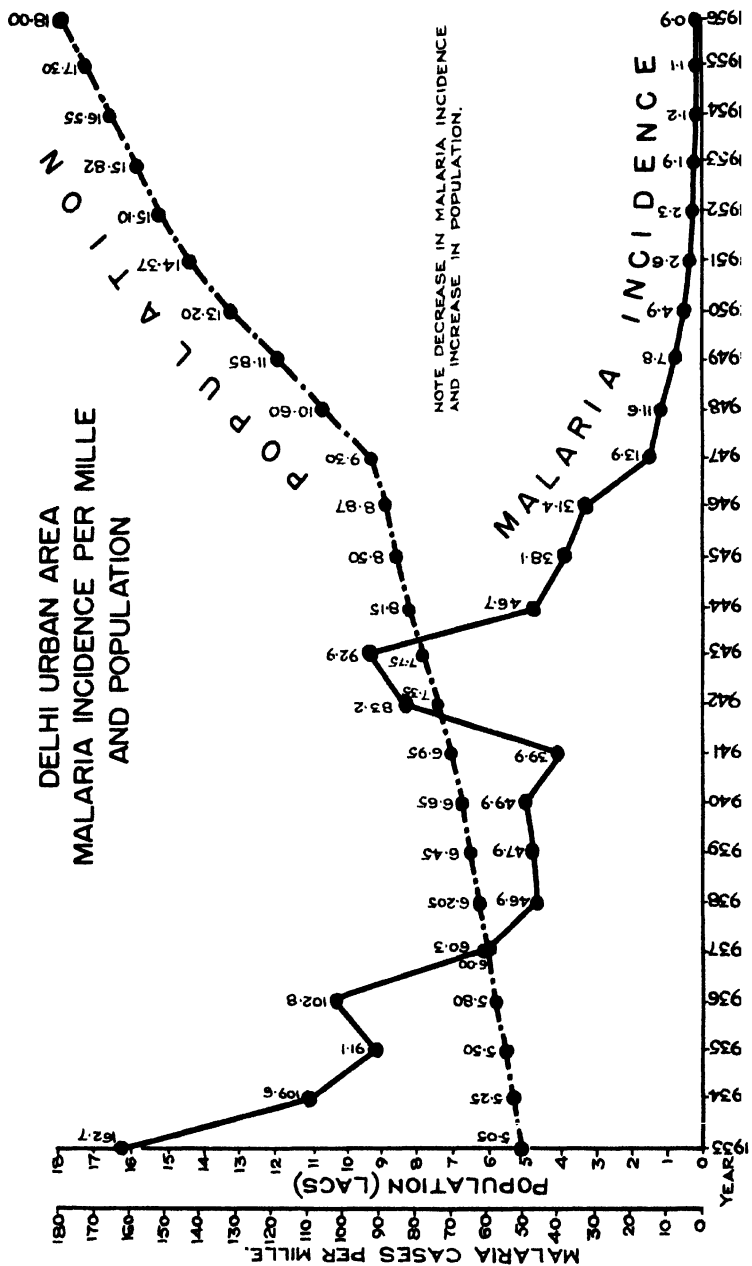
EXPLANATION

NON-MALARIOUS AREAS ----- 

MALARIOUS AREAS ----- 

AREAS WHERE MALARIA CONTROL MEASURES ARE IN OPERATION ----- 





THE WINGED MENACE

therefore, to be an integrated attack on this disease and the directive has to emanate from a body like the Malaria Institute of India. Under the National Malaria Control Programme, 162 Malaria Control Units were set up in the First Five Year Plan period. Each Control Unit consists of 173 personnel with a Malaria Officer at its head. The annual expenditure on staff per unit comes to Rs. 1,32,000. The Central Government provides four trucks, a jeep, a power sprayer, 36 hand compression sprayers, 72 stirrup pumps, 40 tons of D.D.T. and a quantity of anti-malarials. The State Governments have to bear an expenditure of Rs. 1,79,000 in the first year on each unit and have to maintain the units, on their own, in subsequent years.

An important project like the National Malaria Control Programme cannot play a merely negative role. The Malaria Officer is hence required to collect data regarding the rates of morbidity, the spleen rate, the parasite rate in children etc. Only when such epidemiological and entomological data are available can the success or failure of such a programme be established.

The 162 units that started functioning in the First Five Year Plan period covered a population of over 120 millions. The table below will give an overall picture:

Year	Annual incidence	Reduction	Remarks
1935	100 million cases		
1952-53	75 million cases	25 million cases	Partially as a consequence of the reduction in population due to partition and partially as a result of malaria control measures in certain areas of the States like Delhi, Bombay, Mysore, U.P., Coorg, Madras, etc.

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Year	Annual incidence	Reduction	Remarks
1953-54	. 60.7 million cases	14.3 million cases	Commencement of N.M.C.P.
1954-55	. 41.2 " "	19.5 " "	
1955-56	. 19.3 " "	21.9 " "	

These figures do not, however, portray the real extent of reduction achieved as a result of the operation of these units, as the figures in respect of the areas in which they operate are diluted by those relating to other areas where no such reduction has taken place. In spite of this, however, the trend is in every way encouraging. The figures in respect of the spleen rate, the parasite rate etc. in respect of sprayed villages in various States is given in the table below:—

State	Child spleen rate in sprayed villages in per cent			Infant parasite rate sprayed villages in per cent		
	1953-54	1954-55	1955-56	1953-54	1954-55	1955-56
Bhopal . . .	34.1	16.3	7.1	N.D.	N.D.	N.D.
Delhi . . .	1.1	0.4	0.4	0.0	0.0	0.0
Madhya Pradesh	40.0	26.1	13.7	7.0	5.7	1.0
Manipur . . .	43.1	15.5	11.1	N.D.	0.8	0.1
Mysore . . .	12.3	2.5	1.3	0.1	0.1	0.1
Orissa . . .	34.1	26.4	18.2	4.1	0.6	0.0
P.E.P.S.U.	4.5	1.6	0.5	0.0	0.0	0.0
Punjab . . .	7.8	6.7	3.2	0.3	0.15	0.04
Uttar Pradesh .	13.6	18.1	12.7	0.4	3.3	0.3
West Bengal .	20.3	16.4	6.7	N.D.	0.0	0.0

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In India as a whole malaria morbidity has declined from 75 million in 1952-53 to 60 millions in 1953-54 and further to 19·3 million in 1955-56. A decline of 68 per cent has thus been achieved in two years of the operations of the National Malaria Programme. There is, however, no room whatsoever for complacency. Compared to the figures of malaria morbidity in other countries, India still has a high rate as is shown in the figures below :

Japan	<i>per lakh</i>	0·1
Spain	—do—	0·2
Italy	—do—	0·5
Cameroons	—do—	1·7
Congo	—do—	5·0
Colombia	—do—	5·4
Togo	—do—	7·6
Indo-China	—do—	8·7
Madagascar	—do—	51·9
Gautemala	—do—	53·0
Mexico	—do—	97·2
India (1948)	—do—	201·0
India (1955-56)	—do—	54·0

Before the National Malaria Control Programme was launched, the malaria morbidity in India was 201 per 100,000 of the population. Within three years, it has come down to 54 per 100,000 of the population.

The progressive extension as well as intensification of malaria control operations from 1952 is shown in the Malaria Map of India and the Malaria Control Maps. All the endemic as also the fulminating epidemic areas have now been covered.

It has already been stated that within one year of the operation of the Malaria Control Programme the incidence has fallen to 50 per cent. It now remains to assess the socio-economic consequences of this decline in incidence. Lt. Col. Jaswant Singh has, on the basis of a

careful study of morbidity data, estimated that in the agricultural sector alone the number of work-days lost as a result of malaria was 156 million days or 4,27,400 work years. As the incidence of malaria fell to 13·3 million in this sector of the population the number of work-days saved as a result of the operations of the Malaria Control Programme was 116·4 million days or 3,19,117 work years in the year 1956 alone!

It is difficult for the average understanding to visualise such astronomical figures. A few concrete instances which are given below will make for easier illustration. A pilot study in Mysore has revealed that an investment of Re. 1 in the Malaria Control Programme brings a return of Rs. 97/-. Another study has revealed that the Malaria Control Programme in a malarial area has stepped up the paddy yield from 2800 acres of land resulting in an increase of Rs. 20·5 lakhs in money value. In Punjab and Uttar Pradesh, malaria control rendered it possible to bring under cultivation 13,500 and 26,200 acres of land respectively. In the colliery areas of the country the reduction in the incidence of the disease has led to an increase in coal raisings. Similarly a new lease of life has been given to the dying betel nut industry of South Kanara as a result of malaria control operations.

There is, however, one other factor to contend with. Those areas which have been covered under the National Malaria Control Programme have been protected against new infection for a period of three years, the parasites in the human hosts having completely disappeared. We, however, learn that mosquitoes in other countries are gradually acquiring resistance against insecticides. The first factor has clearly demonstrated the possibilities of eradicating the disease, the second underlines the

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need for urgent action. It is, therefore, clear that an eradication programme is preferable to a control programme. With the assurance of complete freedom from the disease the cost of an eradication programme over a decade or two could be considerably less than that of a control programme. A control programme is confined to intensive work in malarial areas leaving out other areas which are not considered to hold major malaria hazards. While the Malaria Control Programme is estimated to cost about Rs. 27 crores in the Second Five Year Plan and over Rs. 25 crores in the Third Five Year Plan the corresponding figures for the eradication programme are Rs. 51.46 crores and Rs. 11.78 crores respectively. But thereafter while the control programme will still mean an annual expenditure of Rs. 5 crores in every 5 year plan period, the expenditure on the eradication programme will not even exceed half a crore per year.

It has been stated elsewhere that diseases like malaria transcend State boundaries. Therefore, the story of India's fight against malaria will not be complete without a reference to its international aspect. In other countries too where malaria is endemic, control programmes are in evidence. India is co-operating with other countries by a mutual exchange of technical knowhow, by training personnel and by loaning the services of Indian malariologists. Technical experts from abroad are working in this country under the auspices of the W.H.O. Seventeen Indian officers are conducting malaria control operations in Afghanistan, Burma, Thailand, the Philippines, Indonesia, Sudan, etc.

Today, malaria has been brought to bay though not completely conquered. Our casualties today are less than a quarter of what they were in 1947. Anti-malaria mea-

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asures have been responsible for substantial increases in production and in earning capacity. Not only has there been a significant reduction in malaria mortality but anti-malaria measures have indirectly brought about a reduction in the morbidity from other diseases, for malaria leaves persons in such a debilitated and emaciated condition after its attacks that they fall an easy prey to other diseases.

To battle is ours and it is not too much to hope that this scourage of the tropics will have been wiped out from this country in the near future.

The Campaign Against Guerrillas

Some diseases launch an open attack, whereas the forces of others have their guerillas. The tubercle bacillus is such a guerilla. No man or woman is immune, whatever his or her social or economic status. Darkness, filth and dirt and a low general vitality generally provide the ground work for making human beings easy targets for an attack by this bacillus, while the disease has little chance of flourishing in the presence of bodily vitality, clean, sunny and well ventilated dwellings and good environmental hygiene.

The respiratory tract is the principal route of infection for tuberculosis. The infection is carried into the lungs in the form of tiny bacilli-laden droplets. There are of course other routes such as through the alimentary canal. Persons suffering from pulmonary tuberculosis infect others through coughing, sneezing and spitting. The bacilli that are ejected remain suspended in the air and are breathed in by unaffected persons. Infection through the digestive canal is caused by the consumption of contaminated food handled by open cases or through the consumption of the milk of tuberculous cows. Once the bacilli are introduced into the system they may cause tuberculosis which may be of a benign nature, but when the infected person's vitality is lowered, the disease assumes an acute form. Tuberculosis in adults has a wide range of effects ranging from a lesion which lies in a

dormant condition throughout life to extensive destruction of the lungs and to death in a short time.

The tubercle bacillus has very little chance of surviving in healthy and hygienic surroundings. While the control of this disease, which takes a toll of some 5,00,000 lives a year, has a curative side, great importance has to be attached to its preventive aspect. On the preventive side the first step is the destruction of the infective bacilli before they can reach an unaffected person. Sunshine and the free flow of air are two very simple preventives. Disinfectant vapours are also used to reduce air contamination. Ultra-violet radiation is also a disinfecting agent, but it has its own limitations both of cost and of availability. Dust can be laid by oil impregnation of the clothes, linen and blankets.

In normal Indian life many of the essential conditions for a healthier way of life are lacking, whether due to social and economic conditions, or to antiquated ideas and superstitions or to the general apathy towards changing old ingrained habits. But it is a fact that, as a consequence, tuberculosis has a strangle-hold in this country which only a herculean effort can loosen.

It has been estimated that in India some 5 lakhs of people die of tuberculosis in any one year and that the number of the affected is roughly five times this figure. By themselves these figures are bad enough, but with India's march towards economic sufficiency mention must needs be made of another development. The social and political economy of the country is undergoing considerable change, and a process of industrialisation and urbanisation has set in with resultant over-crowding in urban areas which sometimes create slum conditions. This

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in itself is a factor which is likely to add to the problem of tuberculosis in India.

In the past, quite a large number of cases of tuberculosis were treated by private practitioners of modern medicine. But the number of such doctors was too small to cope with the very large number of cases and as a consequence a not inconsiderable number of cases were treated by persons who did not possess the minimal knowledge of the aetiology, epidemiology or therapeutics of the disease. Sometimes, where a correct diagnosis had been made in the early stages, the patients were unable to get proper treatment for lack of funds or for lack of easily available facilities or services. In this background of poverty, ignorance and superstition and low standards of nutrition and hygiene, with grossly inadequate facilities for early diagnosis and treatment, the disease made tremendous inroads into the nation's health. For instance, in 1947 there were only a little more than 100 T.B. clinics and hospital accommodation of only 5,000 beds. There was hardly one X-Ray Unit per two million of the population. Small wonder then that of the T.B. patients who went to clinics for the first time *54 per cent were in an advanced stage and only 14 per cent in the early stage.*

For every 5 lakhs of persons that die of tuberculosis every year, there are about 25 lakhs of persons suffering from the disease. For these, no less than 4,000 clinics are required. In respect of personnel, estimates show that 15,000 doctors, 50,000 nurses and 12,000 health visitors are required, as against the 250 doctors and 500 nurses and health visitors available in 1947. The cost of providing these facilities of personnel and equipment has been estimated to amount to the prohibitive figure of Rs. 400

crores. Intensive preventive measures is the only answer to the problem.

As the work of planning and directing an integrated and coordinated drive against tuberculosis was done in the Central Ministry of Health under the supervision of the Tuberculosis Adviser and as prevention was undoubtedly the most important step in an integrated T.B. Control Scheme, the Central Government introduced BCG Vaccination in this country in 1948 in co-operation with the ITC, the W.H.O. and UNICEF. It also planned to open a few T.B. Demonstration and Teaching Centres in various parts of the country. The latest types of equipment and the services of foreign experts were also obtained through these international agencies. This was only the beginning which preceded the launching of the First Five Year Plan.

About this time, the Tuberculosis Association of India had appointed a Technical Committee, consisting of some prominent tuberculosis workers in the country, to advise on a comprehensive tuberculosis control programme. The Health Ministry, in co-operation with this Committee, prepared a detailed plan under which certain aspects of this plan were to be undertaken by the Central Government and the others by the States. The plan indicated the minimum that should be attempted, and emphasised the need for preventive measures. The Health Panel of the Planning Commission approved the inclusion of this programme in their First Five Year Plan. The measures recommended in this plan in order of priority were:

- (1) Extensive use of BCG Vaccination;
- (2) Establishment of tuberculosis clinics and development of domiciliary services;

- (3) Opening of model Training and Demonstration Centres;
- (4) Provision of beds for isolation and treatment;
- (5) After-care and rehabilitation; and
- (6) Research.

The idea underlying BCG Vaccination is that the introduction of this wholly benign infection into a subject makes him tuberculin positive and guards him against possible massive infection. BCG is not new to the medical world. Though introduced in India in 1948, it has been tried in many countries of the West. Its efficacy has also been well tested by experts in several European and other countries. For instance, among the Red Indians of North America, morbidity and mortality rates from T.B. dropped by 80 per cent. as a result of BCG Vaccination. The plan for introducing BCG in India was adopted only after careful consideration of the technical literature available on the subject, and on even more careful study and evaluation of the experience of other countries which had conducted BCG Vaccination operations on a mass scale.

BCG Vaccination which was started on a modest scale in 1948, had a target for the First Five Year Plan of 87 millions tuberculin tests. For various reasons this target could not be reached. The target for the Second Five Year Plan is to bring the total tests up to 170 million, the estimated vulnerable population of the country. With the introduction of mass vaccination in 1951 the BCG Campaign has acquired an increased tempo and by the end of 1956 over 86 million persons had been tested and about 30 millions vaccinated. The table below gives the progress of the campaign in India.

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Year	Tested (Millions)	Vaccinated (Millions)	Mass Cam- paign units	National expenditure (Rs. in millions)
1949-50 . .	0.53	0.18	(No Mass Campaign Units formed)	0.70
1950-51 . .	2.07	0.68	15	0.98
1951-52 . .	2.72	1.12	48	1.45
1952-53 . .	8.62	2.14	85	2.02
1953-54 . .	12.49	3.86	119	2.48
1954-55 . .	18.78	6.56	131	2.80
1955-56 . .	25.37	10.04	143	3.03
1956-57 . .	14.5	5.3		4.14
TOTAL . .	86.08	30.80	..	17.6

Simultaneously with the introduction of BCG vaccination in 1948, provision was also made for the establishment of a laboratory under the control of the Government of India for the production and distribution of this vaccine. This laboratory is working according to international standards and is now the largest single supplier of BCG vaccine in the world. Besides meeting the entire requirements of the country it also supplies the vaccine to Burma, Ceylon, Malaya, Thailand and Pakistan. This laboratory produced about 3 million c.c. of BCG Vaccine and 6 million c.c. of tuberculin during 1955-56. Since it began to function the laboratory has produced and distributed 11.5 million c.c. of vaccine and 24.4 million c.c. of tuberculin.

One of the important measures in the anti-T.B. Campaign is the establishment of T.B. clinics to form

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central units in the areas from which the main tuberculosis control programme is to be carried out. In addition to engaging itself in a case-finding programme, each centre will also undertake the treatment of patients in their homes. One of the main functions of these centres is to educate the patients, their family members and the public on the nature of tuberculosis infection and the methods of prevention.

There were only 113 clinics in the whole of the country in 1947 and most of these were not functioning satisfactorily. They had neither trained staff, nor modern equipment and they suffered from shortage of funds. Since then many of these clinics have been provided with modern diagnostic and other equipment and a larger number of trained staff have been made available. The total number of clinics now in the country has gone up to 174. Some of these clinics are undertaking domiciliary treatment and are using the new anti-bacterial drugs. The Central Government has undertaken to provide equipment worth Rs. 50,000 for each clinic, of which there is to be one in every district.

In the First Five Year Plan period, three T.B. Demonstration Centres were opened, one each at New Delhi, Patna and Trivandrum. Ten such centres are proposed to be opened in the Second Five Year Plan period. In the Centre at Madras, opened in September 1956, it is proposed also to establish a Chemotherapy Research Centre which will undertake research in modern anti-tuberculosis drugs and also the home treatment plan. Part of the equipment and technical personnel for these centres is being provided by the W.H.O. and the British Medical Research Council. The main object of these investigations is to find out the efficacy or otherwise of domiciliary treat-

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ment of tuberculosis cases with the new anti-bacterial drugs, especially those which can be administered orally. These are expected to furnish the data for assessing whether these drugs can be used as a public health measure to control tuberculosis in the country without the necessity of providing institutional treatment.

Even though preventive vaccination and domiciliary treatment are the main planks in the T.B. control programme, isolation facilities and hospital accommodation for tuberculosis cases is also necessary and has to be provided by the States to the best of their ability and to the limit of their resources. In 1947, India had only 5,000 beds for the treatment of tuberculous patients distributed in about 65 sanatoria and hospitals. Much progress has been made since then and today we have 22,138 beds in 140 sanatoria and hospitals. Provision was made in the First Five Year Plan for the establishment of more beds. The Central Government has also a scheme for assisting semi-official as also recognised non-official institutions working in this field. In Delhi, a new hospital has been established at Mehrauli under this scheme by the T.B. Association of India, with financial assistance from the Central Government. Recently another 150 beds were added to the accommodation of which 50 beds were reserved, for the first time in India's history, for children suffering from T.B. Another hospital has been started at the U.M.T. Sanatorium at Madanapalle, with accommodation for 76 child patients. The Second Five Year Plan will see the addition of another 4,000 beds to be utilised exclusively by those suffering from T.B. These are expected to cost Rs. 2,500 per bed as non-recurring expenditure, half of which will be contributed by the Central Government.

No facilities were available in pre-Independence India for the resection of the lung, a new development in the

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treatment of pulmonary tuberculosis. These facilities have now been provided at various centres. Some of these centres are associated with the general hospitals attached to the older medical colleges. The main centres providing this treatment are the Christian Medical College Hospital, Vellore; Union Mission Tuberculosis Sanatorium, Arogyavaram, Madras; Union Sanatorium, Ajmer; Wanless Sanatorium, Miraj; Christian Medical College Hospital, Ludhiana and University Chest Centres in Bombay, Calcutta, Madras and Amritsar.

No programme of tuberculosis control can be considered complete without the provision of after-care facilities and rehabilitation centres. Prior to 1947, no serious attempt had been made to deal with this problem, though there did exist an after-care colony at the Union Mission Tuberculosis Sanatorium at Madanapalle. This was started in 1930, and employed a large number of ex-patients. A few after-care centres have since been established on a small scale, the main ones being at Madras and Bhowali. The present plan is to establish 8 work centres, mainly in association with the larger clinics in cities where patients, ex-patients and their families will be taught handicrafts, some of which can be carried on by them as cottage industries.

It is now recognised that research is an important factor in the fight against tuberculosis and has its place in the study of epidemiology and methods of control. For many years, sporadic and limited investigations had been carried out by different institutions with regard to the efficacy of anti-bacterial drugs in the treatment of tuberculosis. Recently limited epidemiological surveys of groups of population have also been done with miniature X-ray

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units. As these isolated and uncoordinated efforts could not give a comprehensive and accurate picture of tuberculosis in urban and rural areas, a national sample survey was undertaken in 1955 by the Indian Council of Medical Research with financial assistance from the Government of India. Under this programme 1,85,000 persons have been X-rayed so far. The results of these surveys were reviewed at the International Tuberculosis Conference recently held in India. This is the second largest mass X-ray survey ever carried out in Asia, the first one being in Japan. A field research programme was started in 1949 at Madanapalle with a view to evaluating the results of anti-tuberculosis measures amongst a population of 60,000 living in rural and urban areas. Certain factors connected with BCG Vaccination such as post-vaccination allergy are also being studied.

The Ministry of Health have helped to develop voluntary work in the country mainly through the agency of the Tuberculosis Association of India. Institutions like the Training and Demonstration Centre, New Delhi and the Mehrauli Tuberculosis Hospital, which are run by the Association are largely financed by the Government of India. Government also gives financial aid to the Lady Linlithgow Sanatorium, Kasauli and to the Dharampore Sanatorium. The Government of India has a fund from which it gives *ad hoc* grants to recognised non-official organisations and institutions.

The Tuberculosis Association of India is an organisation which is wholly devoted to the eradication of tuberculosis in India. Government is closely associated with this body of which the Union Health Minister is the President, and the Director General of Health Services, the Chairman. The Association's Technical Adviser is also the Tuberculosis

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Adviser to the Government of India. The Association has done considerable work in recent years in educating the general public in tuberculosis and its prevention and in coordinating the anti-tuberculosis work in different parts of the country undertaken by the Government and by non-official organisations.

Much has been done in the campaign against tuberculosis, but much more remains to be done. With India's meagre resources, it is not possible for this country to provide such institutional and other facilities as are in evidence in the more advanced countries of the West. The accent, therefore, has been on prevention, and on the treatment of the patient at home. India has a programme but it requires the fullest public cooperation for its implementation. It is reported that in Denmark T.B. hospitals had to be turned to other uses because there were no cases of T.B. Such progress in India seems a rosy dream. Perhaps it is. But it can be realised and, if the heartening progress already achieved is any index, it assuredly will be.

Other Campaigns

Malaria and tuberculosis are not the only diseases that India's teeming population have to reckon with. There are many diseases which in their epidemic form, decimate entire populations. There are others which are painful and debilitating. Some have been already brought under control by measures taken over several decades. Others have only been tackled in the last nine years.

Smallpox, plague and cholera were three of the most important epidemic diseases which worked havoc in the past. The incidence of the first has been lowered to a very marked extent since smallpox vaccination became an accepted feature of Indian life. Plague and cholera, against which large scale inoculation is undertaken during epidemics, have gradually been brought down to an extent where they no longer constitute major health hazards. Cholera, which is endemic in this country and generally breaks out at the time of melas and fairs, is kept down by inoculating all such as attend them. The menace of typhoid, guinea-worm and hook-worm is being met by hygienic water supply methods and proper sanitation, particularly in the urban areas. These infections are mostly localised and can be cured by curative and prophylactic measures.

There are however a few major diseases which do not present such spectacular mortality and morbidity figures but which, all the same, constitute a serious health problem

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and endanger the natural and working-life of large numbers of people in India. Amongst them may be mentioned filaria, leprosy and the venereal diseases.

Filaria is not new to India. This disfiguring disease has a pretty ancient history having been mentioned even by Susruta some 2,500 years ago. Even as long ago as 1709 A.D., Clerk used a characteristic phrase "Malabar legs" for elephantoid legs found in the Cochin area. High mortality has never been a marked feature of this disease and as a result little interest was taken earlier in the problem of its control. Even the areas in which this disease was prevalent, were not known and it was treated more or less as a sporadic disease. The question was seriously taken up by the present Government and a questionnaire was sent out in 1951 to all the States with a view to discover the extent of the prevalence of filaria in different parts of India. The replies were most revealing. They showed that apart from the Malabar Coast, the disease was prevalent in Andhra, Assam, Bihar, Bombay, Hyderabad, Madhya Pradesh, Uttar Pradesh, Saurashtra and West Bengal and also in the Nicobar Islands and the French Settlements.

In the last year of the First Five Year Plan a National Filaria Control Programme was projected. The programme included measures for the setting up of survey units to delimit the endemic areas and control units to administer the methods of control. A pilot unit was to operate in each participating State and 13 control units and 22 survey units were sanctioned for various States. The Government of India, in collaboration with the United States Technical Co-operation Mission, is providing material and equipment free of cost, required for survey and control work to the States participating in the national control programme. Under this arrangement the State

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Governments bear the operational cost of the units. All the States where filariasis is prevalent, with the exception of Assam, agreed to participate in the programme. Ten control units and 18 survey units were actually established during the First Five Year Plan period at a cost of Rs. 25·2 lakhs.

The survey work which is in progress in all the participating States except West Bengal covered a population of about 8 million last year.

Mass therapy is in progress in selected areas of Andhra, Bombay (Surat), Madras (Mangalore, Kozhikode and Kasargode), Orissa and Uttar Pradesh (Ballia) where the specific drug has been administered to about 3 lakhs of people.

Anti-mosquito and anti-larval measures are in progress in Andhra, Bombay, Bihar, Madras and Orissa. About 75,000 houses have so far been sprayed with dieldrin. As the endemic areas covered a sizeable population of 25 million it was felt that only a full-fledged, coordinated programme could meet the need. As a result of the recommendations of the I.C.M.R. whose interest in the control project has been unflagging, a Filaria Section has been established in the Malaria Institute of India, chiefly because of the fact that the vectors of this disease are mosquitoes and there is considerable similarity to be found between the measures to be adopted for its control and those for malaria control.

During the Second Five Year Plan it is proposed to establish at least over 65 additional control units so as to cover the entire population exposed to the risk of filariasis. The phasing for the establishment of these units is as follows:—

1956-57	20
1957-58	20
1958-59	25

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Out of these control units the establishment of the following 12 additional control units has already been sanctioned by the Government of India in September, 1956, four for Orissa, two each for Bihar, Kerala and Uttar Pradesh, and one each for Bombay and Madras. The programme is expected to cost altogether Rs. 9.25 crores.

Leprosy is another disease which creates not only public health and medical problems but also grave social problems. For ages private organisations and institutions have devoted themselves to the task of leprosy relief but a national programme was only brought into existence in the last year of the First Five Year Plan. A Committee to report on the control of leprosy was appointed in 1954 in accordance with the decision of the Central Council of Health taken at its second meeting held at Rajkot in February 1954.

- (i) To assess the leprosy problem in India.
- (ii) To review the anti-leprosy work in the country particularly with reference to facilities in respect of treatment, isolation, training of anti-leprosy personnel and research.
- (iii) To recommend measures to further intensify anti-leprosy work in various States where the disease is a serious public health problem. In making the recommendations, the Committee should keep in view the financial resources of the States concerned.
- (iv) To assess the problem of inter-State migration of beggars suffering from leprosy and to recommend measures for its solution.
- (v) To examine the existing legislation dealing with leprosy, and in case it is considered defective, to

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suggest a model legislation which the Centre and the States should enact with such modifications as local conditions may necessitate.

- (vi) To make suggestions regarding the coordination of the activities of Central and State Governments and voluntary organisations, e.g., the Gandhi Smarak Nidhi, and the Hind Kusht Nivaran Sangh.

The Committee submitted its report in 1955.

The National Leprosy Control Scheme was thereupon taken in hand and operations were started in 1955-56, the last year of the First Five Year Plan. While 40 centres were sanctioned for the scheme, 33 centres were established in 14 States covering a population of 20 lakhs, roughly half of which had been surveyed. About 17,000 cases were registered, and suitable arrangements were made for their treatment, but only about three-quarters of these cases took the treatment. About 27,000 healthy contacts were registered for observation. Under the Second Five Year Plan the number of centres are to be increased by another hundred. During the first six months of the Second Plan period three more centres have been established, bringing up to 36 the total number of centres working at the end of September, 1956. The population covered by these centres has reached 27 lakhs, of which about 15 lakhs have been surveyed. The total number of known cases in the areas is over 26 thousand, about 90% of whom are on the rolls for treatment. In addition over 8,000 leprosy patients from outside the project have been registered bringing up the total number of cases registered for treatment at these centres to 32,000. A most disquieting feature is that all the

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patients on the registers do not report regularly for treatment. During the quarter ending 30th September 1956, only about 25,000 presented themselves. Thus about 25% of these cases failed to avail themselves of the facilities provided even when near the homes of the patients.

Trained workers are required for the implementation of this work and a scheme for specialised training has been sanctioned and is to be put in operation soon.

Venereal diseases belong to the group of communicable diseases and are quite widespread in India. They present a problem different from other communicable diseases. The spread of V.D. is difficult of control, primarily because it concerns one of the three main human appetites of hunger, thirst and sex. Secondly, because there is a social stigma attached to the disease. Control measures, therefore, must veer more towards case-finding than towards prophylactic and therapeutic measures. Facilities for the control of this disease vary from State to State and quite often areas having a very high degree of incidence provide quite inadequate control facilities. Few States can boast of organisations dealing with both preventive and epidemiological work as well as diagnostic and clinical treatment. In venereal disease control schemes, the new idea is to integrate such control programmes in the frame work of existing public health and medical relief programmes. Apart from prevention and case-finding, mass treatment of patients in areas where there is a high incidence of V.D. and analogous diseases like yaws, is very necessary. Seventy-five district clinics are proposed to be opened during the Second Five Year Plan. There will also be eight headquarters clinics. For the initial non-recurrent expenditure for the purchase of equipment for V.D. clinics the Central Government pro-

pose to sanction a grant of Rs. 15,000 per clinic and contribute 50% of the running expenses.

The provision of therapeutic and prophylactic measures does not cover the entire requirements. More is required. This includes the use of proper health education techniques both in the case of leprosy and venereal disease as these are likely to go a long way in furthering case-finding and preventive activities, thus helping to control the spread of these diseases. Patients suffering from these two diseases tend to be a little difficult, but quite remarkable results have been achieved by the sympathetic attitude of medical and social workers in winning the co-operation not only of the sufferers but of the community as a whole. Stress is, therefore, being increasingly put on educating the public in general and patients in particular to adopt a wholesome attitude to each other.

Cutting Enemy Communications

The science of modern warfare gives the destruction of enemy bases and of their lines of communication a very high place in its operational repertory. In our war against disease we must give it an equal importance. There are many carriers of disease. One of them is water, which is so necessary to life. In its unpurified condition it is quite often a carrier of many communicable diseases of the digestive system like cholera, typhoid, dysentery, infective hepatitis and others. It can carry substances like lead, nitrates and fluorine which are either toxic or have a deleterious effect on health when present in the water in sizeable quantities. Many other unspecified diseases are also caused by impure water i.e., water which is either contaminated or polluted. By contaminated water is meant the water in which are found infectious animal or human wastes or poisonous chemical substances. The term 'polluted' applies to water which is muddied, has a bad appearance or taste or smell. Clean water fit for human consumption is neither polluted nor contaminated.

In India sources for obtaining this prime necessity of life are very varied. We get water from natural or man-made lakes, from ponds, tanks, wells, rivers, canals and tubewells. The danger of obtaining other than clean water exists in all these sources. The hazards are not lessened by the unscientific disposal of human wastes which latter must, some time, reach the source of water and

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infect it. Great importance therefore attaches to the problem of ensuring a supply of clean water to the inhabitants of both rural and urban areas and to prevent the contamination of the water by a proper system of sanitation.

Every civilised country has placed the provision of a protected water supply as the single most important public health measure. Unfortunately in India it was till recently a neglected problem. Even at the time when the Bhole Committee sent in its report, the population in urban and rural areas which could bank on safe water supplies was 6·6% in Madras, 7·3% in Bengal and 4·1% in U.P. In the rural areas of the Punjab only 0·8% of the population could boast of a protected water supply.

A few large cities in India like Bombay, Calcutta and Madras do have safe water supply arrangements which ensure laboratory tested clean pipe water supply. Different filtration and decontamination systems are in vogue in other cities. In the olden days, in the case of urban communities which wanted a protected water supply, the methods for obtaining the facilities were curious and circuitous. Those local bodies, which felt the necessity for such a water supply, applied to the provincial governments for technical and financial assistance. The State Governments, on their part, estimated the cost and arranged to advance as grants-in-aid or loans or both to cover the cost in excess of what the local body was able to provide. The work was undertaken and completed by the Provincial Public Works Department and the completed system handed over to the local bodies who were responsible for its maintenance. This procedure itself was a deterrent to the expansion of water supply facilities in the country. First the local bodies did not show enough

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initiative to propose such a measure, even though it was in the highest interest of the local inhabitants to do so. Even when they did, the financial implications of these proposals left them in a condition which bordered on apathy. Added to this was the usual red tape in which these proposals got tangled up and which considerably altered the original scope and time-schedule for their completion.

If urban water supplies suffered on this account, rural supplies never made any headway at all as the supplies were mostly from wells, tanks, rivers and streams and catered to the needs of a scattered population. Even where steps were taken by the State Governments for creating a fund for providing this facility to the rural areas, the maintenance of works like protected wells or tubewells was left to the local bodies, sometimes with disastrous consequences. In one province, of the tubewells handed over by the Provincial Government to the Local Authorities for maintenance, no less than 20 per cent were in a derelict state and 50 per cent were in urgent need of major repairs. Attempts were variously made in many parts of the country to provide protected water supplies but they failed partially due to lack of timely support on the part of the State Governments and partially due to the flagging enthusiasm of the local bodies as a result of financial difficulties or local politics.

There was also the connected question of the disposal of human excreta and the dispersal of waste water from human ablutions and manufacturing processes. Such waste has to be prevented from taking its contamination to the source of any water which is used for human consumption. The problem in the urban areas differs from that in the rural areas. In the cities and towns where a

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pipéd water supply is made available to the public it is necessary to have properly channelled sewerage and drainage systems. In the village areas where the water supply comes from wells, tubewells, lakes and ponds, the disposal of sewage presents a naturally different problem. Such contamination is likely to reach the sources of water supply by surface washing or by percolation. A good drainage system which is feasible and protects the contamination from reaching the source of water is one of the simplest ways of tackling the problem.

The problem was vast and needed resources far beyond the possibility of immediate procurement. But it was clear that even if such resources were made available, the results might be tardy in coming and only a great motivating or guiding force could ensure a successful outcome of a programme involving the provision of a protected water supply and sanitation to the largest possible part of the population. Only the Central Government could undertake this task of initiating and progressing this gigantic enterprise.

It was only towards the end of the First Five Year Plan, however, that the National Water Supply and Sanitation Programme was formulated. This programme is designed to provide a protected water supply and adequate drainage for the entire population of the country in the course of the next two or three decades. This cannot really be a Central function, and, as we have seen earlier, has always been a decentralised subject handled at local Government level. The local bodies and municipalities particularly in India, were and are financially ill placed for undertaking any water supply and drainage schemes on an adequate scale. Not only was assistance needed from the State Governments but also from the Central

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Government if the programme envisaged in the Plans was to be implemented. What resources were estimated as the overall immediate requirement and how they were to be provided has been dealt with earlier may be briefly recapitulated here. The assistance given to States for their urban and rural schemes is in the form of loans and grants-in-aid respectively. It is left to the State Governments to decide in what manner to pass on these loans to local bodies, the loans being repayable in 30 years. The rate of interest charged is the same as for the loans for the development works of the State Governments.

A sum of Rs. 12·72 crores was made available for allotment in the First Five Year Plan period (i.e. 1954—56) for the urban phase. The State Governments were requested to submit their schemes after careful consideration of the relative importance of the schemes based on the following priorities:

- (i) Municipalities which have no protected water supply arrangements;
- (ii) Improvements or expansion of existing facilities of water supply in urban areas where the present arrangements are either inadequate or unsafe from a public health point of view;
- (iii) Pilgrim centres; and
- (iv) Areas which have piped water supplies and therefore require new sewerage or improvement to existing sewerage to remove waste water and otherwise eliminate hazards to public health.

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A sum of Rs. 6·0 crores was to be made available for giving assistance to the States for the rural phase of the water supply and drainage programme in the First Five Year Plan. The following priorities were fixed in these cases:

- (i) Areas where cholera, typhoid fever and other water and filth borne diseases are most prevalent;
- (ii) Areas of great water scarcity;
- (iii) Areas covered by public health centres where extensive personnel services are being developed; and
- (iv) Pilgrim centres.

In these cases of diffuse and semi-organised communities, the assistance from the Centre had to take a more liberalised form.

Half of the total expenditure for each approved scheme was to be met by outright grants, the other half being found by the States through contributions by the villagers, local bodies and from State revenues. Local contributions were to be in the form of such labour and locally available material as the villagers could provide without an undue strain on their resources and without hampering the progress of the work. In all cases, even where a matching contribution of 50% of the cost of the schemes could not be raised by the State, the shortfall would be met by the Central Government by advancing loans in addition to the 50 per cent grants referred to above on the same terms as govern advances for other development works.

Twenty-three States participated in the urban phase of

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this programme. They submitted 287 water supply schemes and 79 drainage schemes for technical scrutiny. Of these the Central Government approved of 196 urban water-supply and 58 drainage schemes for the sanction of loans which, in the two financial years 1954-55 and 1955-56, amounted to Rs. 1.185 lakhs and 87 lakhs respectively, making a total of Rs. 1,272 lakhs for the First Plan period. Of this a little over Rs. 829 lakhs was actually paid upto end of March, 1956.

Twenty-one States participated in the rural phase of the National Water Supply and Sanitation Programme. The number of schemes that came up for scrutiny were 170, of which 134 were approved. Grants allocated to the States for rural schemes during 1954-55 and 1955-56 (upto 31-3-1956) amounted to Rs. 338.21 lakhs and Rs. 245.74 lakhs respectively. Of the total of Rs. 583.95 lakhs during the First Plan period Rs. 280.0675 lakhs has been sanctioned upto the end of the financial year 1955-56.

Many of the urban schemes are now nearing completion. Some are 40 to 50 per cent. complete. Progress on the rural phase of the progress has not been quite as satisfactory, mainly due to lack of trained personnel and of State organisations to handle the work. The actual progress is best set out in the table below in terms of the population served.

	<i>Phase</i>	<i>Achievement</i>	<i>Target</i>
Urban	.	1,60,29,661	2,02,67,451
Rural	.	25,38,698	44,41,684

A plan of such magnitude could hardly have been projected, if we had to rely entirely on our own resources.

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Firstly we lacked the equipment, and secondly we lacked trained personnel. Both these required, at least for the present, some external assistance. Fortunately this was readily forthcoming and the Indo-U.S. Operational Agreement No. 25 and its supplement which were signed by the representatives of the Government of India and the Government of U.S.A. in April 1954 and March 1955 respectively, provided for assistance to India to the extent of \$3,100,000 in the U.S. fiscal year 1954 and \$1,800,000 during the fiscal year 1955. These funds were made available for the purchase and transport to India of equipment and materials which were required for the National Water Supply and Sanitation Programme through the T.C.M.

This agreement, with the supplement, also provides that the U.S.A. will make available within the limits of the available appropriations additional funds necessary to pay the salaries and other expenses of public health engineers and other sanitary personnel employed by the U.S.A. and assigned to the Government of India and the States of India for the purpose of providing technical assistance for the National Water Supply and Sanitation Programme.

The equipment and material obtained from abroad were set out against loans and grants-in-aid to the State Governments, as the case may be. Most of the material received under the agreement is already in the hands of the State organisations, the remaining being in transit.

In the Second Five Year Plan period, Rs. 30 crores have been earmarked for distribution as loan to the States for urban water supply and drainage schemes, matched by a Rs. 23 crores provision in the State plans. A special Central provision of Rs. 10 crores for the grant of loans

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towards water supply and drainage schemes to Corporations has also been made.

The States have provided Rs. 28 crores for rural water supply and sanitation schemes for which the Central Government will make available during the Second Plan period a matching contribution equivalent to 50% of the cost of the schemes sanctioned under this programme.

The working of all these schemes requires trained public health engineers. A programme for providing such training to personnel during the second plan was sanctioned in November, 1956 and a sum of Rs. 50 lakhs was provided for this purpose. The training programme for 1956-57 provides for a one year course for thirty engineers; a three months' courses for 100 engineers, 200 engineering subordinates and 150 sanitary inspectors; and a one month course for 100 plant operators. The students undergoing training will be granted stipends.

The All-India Institute of Hygiene & Public Health, Calcutta, The Engineering College at Guindy, Madras, and the Roorkee Engineering College, Roorkee, are providing training courses and facilities. Necessary tuition and examination fees are being paid to the trainees at the institutions other than the All-India Institute of Hygiene & Public Health, Calcutta, where they are exempted from payment of these fees. Assistance given to the three institutions includes Rs. 1 lakh per college for construction of buildings, and an amount of Rs. 22,500 per annum for each institution or approximately 50% of the anticipated expenditure on teaching and other staff.

A ten-month course in M.E. (PH) was initiated on the 1st of June 1956 at the All-India Institute of Hygiene and Public Health, Calcutta with seventeen students who are

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now undergoing training. An amount of Rs. 25,075 had been spent upto the end of February 1957 in connection with the payment of their stipends etc.

A three months' course in Public Health Engineering has also been started at the institute from January 2, 1957 with 30 trainees. Rs. 3,000/- had been spent on these students upto the end of February 1957 towards payments of their stipends.

A short term course in Public Health Engineering commenced at the College of Engineering Guindy, Madras, with effect from 15th February 1957.

A four weeks course for Water Works Plant Operators was held from 18th February 1957 to 14th March 1957 in Delhi. Twentyone students attended the course and a sum of Rs. 1,687/- covered the stipends of the trainees.

The Roorkee Engineering College is expected soon to start training courses under this programme.

It took America 150 years to come up to its present level of 13,000 protected water supply systems catering to over 60% of the population. Our problem is even bigger. We are trying to squeeze into a span of twenty years what took very much longer in other parts of the world. We can do it. For one thing we have greater technical advances to learn from and, what is more, we have the faith and enthusiasm of a resurgent nation to which no task can be too big and no effort too great.

THE HOME FRONT

Building up Resistance

The soldier at the front never fights a lone battle. Behind him stands the might and the will of the entire nation. Behind him stands the spirit of resistance. Just as this resistance behind the lines has to be carefully built up in a total war, resistance has also to be built up against enemy attack in a total war against disease.

If any one factor has to be singled out as basic for building up this resistance, one would unhesitatingly place one's finger on nutrition. What is this nutrition and how does it help build up resistance against disease in the human body? The human body is a complex machine. Just as modern machinery requires fuel, lubricants and so on, the human system requires nutritive elements for the building up and proper maintenance of bones and muscles, arteries and nerves and all the other constituents of the human body. It also requires aids like enzymes and hormones for adapting the nutritional elements to the body's needs.

Nutrition and diet are not synonymous though they are popularly used in that fashion. Diet consists of various articles of food which are ingested and converted for use in the body for building up and maintaining it in a vital condition. Nutrition is the end of the process by which these are assimilated and produce the desired result. Malnutrition, conversely, is a state where the body does not obtain its supplies either in the form or to the extent

it needs. Dietary imbalance can be caused by a lack of knowledge of dietetics. It can also be caused by a lack of desire to adhere to a rational dietary, or by stress of economic circumstances which make it difficult, if not impossible, to procure the basic dietary needs to the extent or of the type required for maintaining both physical and mental fitness.

It is grossly incorrect to suppose that the only visible sign of nutritional inadequacy is emaciation. Obesity can also be a manifestation of malnutrition. Nutritional deficiency appears in other forms too when some important ingredients are either absent from the ingested food or are present in quantities harmful to the system. Inadequacy of iodine causes goitre. Excess of fluorine in water causes fluorosis. Polished rice lacks vitamin B and causes beriberi. Lack of vitamin D leads to dental caries and bone deficiency. Lack of vitamin A is the cause of night blindness and a number of other deficiency symptoms. Sometimes these symptoms point to a single deficiency but quite often the symptoms show multiple deficiency which ranges from the lack of proteins, carbo-hydrates, and fats to a lack of vitamins and minerals and other ingredients which go towards replacing the normal depletion caused by the wear and tear of the human body in everyday life.

As science advances, more and more light is being thrown on the precise needs of the human body in respect of specific ingredients and these can now be measured by different yardsticks. The proteins, the sugars and fats are commonly measured in terms of grammes, the minerals in terms of milligrammes, the vitamins in units fixed on an internationally accepted scale though more and more of the vitamins are now being measured in units of still smaller weights or microgrammes.

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Nutritional experts have collected basic data on ethnic, climatic, socio-economic and other considerations and have fixed norms for each type of person and for each type of activity. A sedentary worker requires less calories than the hardworking wood cutter. A man living in the colder regions naturally requires more calories than his brother in the tropics. Though the requirements may vary from individual to individual they can be certainly fitted into a pattern of requirements for different regions and peoples and any variation warranted on individual consideration can be allowed according to circumstances. The Indian dietary varies from area to area which is quite natural for a country of this size and with such varied climatic condition. From the torrid regions of the south to the temperate regions of the north and the cold areas in the higher altitudes, differing climates call for different requirements in the matter of diet. The problem is further complicated by the fact that in the olden days when communication was not easy the dietary had to be based on the availability of food-stuffs. This had led in the past to a very wide variation in the normal diet of the people in the various regions. Rice is the staple diet of the people in such dissimilar regions as the Jhelum Valley in Kashmir, the lower reaches of the Himalayas, parts of the Gangetic plain and the coastal regions of India like Bengal, Orissa, Andhra, Madras, Kerala and Bombay. There are areas like Punjab where wheat forms the main article of diet, while jowar and bajara take its place amongst the Marathas of Maharashtra. Protein requirements are largely met by pulses throughout India but in our coastal areas fish, and in the hinterland meat, also meet, at least partially, the protein needs of the people, though probably on an extremely small scale. Eggs and game are forbidden articles of diet for most of the "twice-born" *and in any case they are not so freely available. Tragically milk is also in

*The Hindu Brahmin.

extremely short supply in a country where the cow is held in such veneration. Difficulties are further created by the customs and prejudices which often take one or other article of food off the dietary list. Bajra, which is a staple food of even well-to-do Maratha families is not looked upon with favour in Uttar Pradesh. People living in the Punjab region have not yet taken kindly to fish while many in the South would look with horror on the idea of eating any meat of any kind. In Saurashtra fish, flesh, fowl and eggs are taboo practically everywhere. To the Christian pork is a delicacy, to the Muslim it is anathema. In the past the vast majority of our top administrators were foreigners with naturally different dietary habits. What wonder then that little attention was paid to dietetics in a country where diet variations were wide and were mostly based on factors which included availability of foodstuffs, religious and customary inhibitions and even personal prejudices? Apart from this, the detailed knowledge of dietetics is barely 100 years old even in the most advanced countries.

In India individual States are primarily responsible for looking after public health nutritional work. The Central Government coordinates their activities in this field and gives guidance and assistance to the States in their efforts to improve nutrition and to eradicate nutritional deficiency diseases as far as possible. The States carry out diet and nutrition surveys and collect data on the dietaries which are within the reach of the average individual. They also provide, with Central assistance, wherever needed, some special requirements of vulnerable groups like school children, expectant mothers and of people suffering from deficiency diseases. Other important activities are public education in dietetics, the training of personnel and research into nutritional problems.

Diet and nutrition surveys which have been carried out in the urban and rural areas of different States and among different groups like industrial workers, growing children and so on, have shown that the Indian diet is ill-balanced. As 90% of an average Indian meal consists of cereals, it is singularly devoid of the many other necessary ingredients such as vegetables, fruit, milk and milk products, meat, game and eggs. In consequence, there is a general deficiency of protein and a marked deficiency of animal protein, of the vitamins A, B, and C and of minerals like calcium and iron or iodine. Even growing children and industrial workers who need it most do not get sufficient protein in their normal diet.

Nutrition surveys have also shown the prevalence of a number of deficiency diseases in India. Some are widely prevalent while others are peculiar to some defined areas or groups of people. Take for instance, goitre. This iodine-deficiency disease is endemic in a 1500 mile long strip along the southern slopes of the Himalaya range consisting of Jammu & Kashmir, Himachal Pradesh, Punjab, Uttar Pradesh, Bihar, West Bengal, Assam, Tripura, NEFA and Manipur. In the Nalgonda district of Hyderabad the high fluorine content of drinking water has been the cause of extensive fluorosis.

The Nutritional Advisory Committee of the Indian Council of Medical Research is the principal body which encourages the carrying out of both surveys and research in the incidence and in the methods of prevention of nutritional deficiency diseases. Grants are made by the Nutritional Advisory Committee to workers in different institutes, universities and other laboratories. The Nutrition Research Laboratory at Coonoor is under the Indian Council of Medical Research. These bodies influence action in

the States and provide the brain-trust of the entire nutritional research activity of the country.

As recommended by them and accepted by the Centre and the States, a number of ameliorative measures have been undertaken in the last nine years. An important one is the school feeding scheme which provides meals, snacks and milk to children studying in primary schools. Milk, which forms the most important item, is made from the skim milk powder supplied in India by UNICEF, an international body of which India is a member.

The school feeding programmes had not been organised earlier on an All-India basis for want of financial help and distribution facilities, though some of the progressive States, particularly, Bombay, Madras, Uttar Pradesh, Hyderabad, Madhya Pradesh, Travancore-Cochin and West Bengal had already started on their implementation. In 1953 in the States of Madras, about 13,000 malnourished children, attending elementary schools run by the Madras Corporation and about 72,000 Harijan children attending Labour Schools in the different districts, received mid-day meals consisting of rice, sambar (dal-vegetable curry) and, where available, 'lassi' or curds. Under another scheme the Central Nutrition Bureau, Poonamallee Health Unit, supplied free mid-day meals to deserving elementary school children. Food supplements like skim milk, vitamin tablets, and fish liver oil were distributed in 1954 to 3420 malnourished children. Bombay has a number of school feeding schemes operating in various schools, both private and Government. In some schools run by the Bombay Municipal Corporation, Milk, snacks and fruit are being provided to malnourished children attending primary schools. On every working day of 1956 some 36,000 children received 8 ounces each of pasteurised (toned) milk in sealed bottles supplemented

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by, *chikki* (toffee) or fruit. About 500 selected malnourished children attending primary schools run by the Poona Municipal Corporation are being given nourishing toffee made of groundnut, jaggery, etc. Arrangements have also been made in cooperation with voluntary social organisations for selling to school children nutritious and hygienically prepared snacks of various kinds, as also gram, at a reasonable price. In U.P., seasonal fruit, sprouted pulses, roasted gram, etc. are distributed in some of the schools at a nominal charge of eight annas per child per month. In West Bengal, over 50 Government schools are participating in mid-day meal programmes. The milk feeding scheme, sponsored jointly by the Central Government and UNICEF, is now working satisfactorily in schools in almost all the States and milk prepared from milk powder is given free to school children.

Expectant mother and young children are also participating in the supplementary food schemes through the M.C.H. centres and hospitals. The largest single requirement in this sphere is milk. Since 1949, UNICEF has made available to India large quantities of skim milk powder for the benefit of nursing and expectant mothers and for children. Originally 17 States in India participated in the supplementary feeding programme which has now been extended to all the States. Under this scheme mothers and children are provided with a glass of milk every day through M.C.H. centres, hospitals, schools, orphanages, etc. Since 1954 a long range programme of supplementary feeding has been introduced—thanks to the supply of sizeable quantities of milk powder. Since the inception of the long range feeding programme, from September 1953 till March 1956, UNICEF has supplied nearly 20,000 short tons of milk powder which has enabled the programme to embrace a larger area and cover a larger number of the vulnerable population, parti-

cularly in the Community Project areas. Currently no less than 384,600 persons are being provided with milk everyday through hospitals and orphanages, while the school children who receive this benefit daily number some 3,53,500.

In the case of the industrial population, efforts are being made to open out industrial canteens in different parts of India. In West Bengal over 195 industrial canteens were opened during this period for serving tea and snacks to the industrial workers. In the State of Madras there are about 223 of this type of canteen attached to various factories and workshops. In Hyderabad, some industrial establishments have opened canteens for providing cheap balanced meals which are inspected regularly by the Regional Nutritional Health Officer who also gives such advice on menus and recipes to the management as is necessary for improving the nutritive value of the food served.

Proper diet contributes largely towards the speedy recovery of patients suffering from nutritional and other diseases, and trained dieticians are greatly in demand in hospitals for working out the diets suitable for particular diseases. A course in dietetics for a diploma of the Calcutta University started in October, 1947 at the All-India Institute of Hygiene & Public Health Calcutta, in collaboration with the Calcutta Medical College Hospital, now goes towards providing training facilities in this subject. During the year 1954-55, five candidates received their diplomas.

No chapter on nutrition can be complete without mention of the work done at Coonoor. Between 1949 and 1953, for example, the number of patients examined at the Nutritional Clinic was 14,867 out of which 777 were cases of nutritional disorders or diseases. Though Coonoor is a

fairly representative district, this figure is not applicable to every part of India. But it would be reasonable to suppose that of all the people that seek medical advice, 5% is a fair estimate of the proportion of persons who suffer from nutritional deficiency diseases. In India people do not, unhappily, seek medical advice until too late, and nearly always after the disease has reached an acute stage. In the case of nutritional diseases which are more widespread and generally less acute and hence unsuspected, the incidence must be much larger than even in some of the endemic communicable diseases. Case-finding in a large population prone to nutritional deficiency would be an impossible task and scientific prevention is the only remedy that can meet the situation.

A scientific analysis has been made of the dietary deficiencies prevalent in India and of the disorders they cause. The table at the end of the chapter shows the breakdown into different deficiency diseases in the 777 cases treated at the Coonoor Nutritional Clinic in the quinquennium 1949-53. An indication having been obtained of the relative intensity of different kinds of malnutritional maladies, research in these was undertaken by the Laboratories more particularly on calorie and protein undernutrition, protein metabolism, nutritional anaemias and the effects of malnutrition on the skin. Studies were also conducted on the nutritive values of edible fats and oils, fat metabolism and on results of fat deficiency. Research on avitaminosis caused by the absence of different vitamins is also being carried out. The Nutrition Research Laboratories at Coonoor also carry out field investigations and other educational activity. Their annual short course in the theory and practice of nutrition has a duration of 3½ months. The syllabus includes instruction in physiology, biochemistry, clinical nutrition, pathology of nutritional diseases and field studies in nutrition.

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The students work in the laboratory and in the clinic where cases of nutritional diseases are demonstrated to them; methods of investigation and treatment are taught in theory and practice. Instruction on the public health aspects of nutrition is given through such practical work as diet surveys in families and amongst school children. The Laboratories at Coonoor also offer research facilities which are recognised by no less than 13 universities in India for the purpose of post-graduate research.

The problem of fixing an adequate nutritional norm and of evolving a dietary to ensure it does not end with the work done in laboratories and research centres. Their economics and feasibility have to be carefully considered from every angle which may include other governmental activities such as those of the Ministries of Food & Agriculture, Commerce, Finance, Railways and Transport. They also entail a considerable amount of inter-state coordination. Most of all they revolve round the man in the street, without whose active cooperation all our efforts to improve the standard of nutrition will come to nought. It is important that he be made "nutrition conscious" and be made to see the utility of accepting the findings of science. Towards this end a fair amount of activity has been in evidence in the past and with the functioning of full fledged Health Education Bureaux at the Centre and in the States, education in nutrition and dietetics is sure to go on apace to the advantage of the health and well being of the millions of India.

Note:—The relative distribution of nutritional disorders and diseases as seen at the Nutrition Clinic (1949—1953).

Xerosis Bitot Spots	215
Nutritional Oedema Syndrome	202
Adult Nutritional Oedema	114

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Ang. Stomatitis, Cheilitis, Glossitis	44
Night Blindness	39
Iron Deficiency Anaemia	39
Keratomalacia	.	.	.	.	.	.	.	.	37
Burning Feet Syndrome	.	.	.	.	.	.	.	.	35
Nutritional Macrocytic Anaemia	.	.	.	.	.	.	.	.	14
Marasmus	.	.	.	.	.	.	.	.	10
Cirrhosis of the Liver	.	.	.	.	.	.	.	.	7
Rickets	.	.	.	.	.	.	.	.	7
Pellagra	.	.	.	.	.	.	.	.	6
Neuritis	.	.	.	.	.	.	.	.	4
Scurvy	.	.	.	.	.	.	.	.	3

There is no safety in numbers

Time was when an increase in population was an asset to any country. Unoccupied territories and uncultivated areas were many and technical advances few. Manpower was, therefore, needed for the production of food and other necessities of life. Wars and pestilences tended to depopulate large tracts of the globe. Manpower was needed for the prosecution of wars which were many and also as replacements for peacetime activities. Today we find that pestilence has gradually been wiped off the face of the globe. Wars, no doubt, are greater in magnitude but even here human beings have given place to mechanised fighting aids. Great technical advances and the advent of mechanisation have rendered unnecessary large scale utilisation of manpower in agriculture and industry.

The population of the world today, as a whole, seems to have overtaken its food and other resources. In 1953 it stood at 2,547 million. The annual rate of increase in population is 34 million persons. Assuming a medium rate of growth, the population in 1980 according to the conclusions of the World Population Conference held in 1954, would be approximately 3,600 million. The increase of 1,200 millions in thirty years between 1950 and 1980 is greater than the growth in the entire past century or in the whole of human history up to 1850 !

What is the comparative estimated rise in food produc-

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tion? In 1952 the world production of food calories was 8 per cent. higher than in the years immediately preceding the Second World War. As against this, world population had increased in the same period by 14 per cent. It has been estimated that for providing adequate quantities of food for the world of 1980, we must show an increase in world food production of 2.25 per cent. If now we look at the figures of the last fifteen years we will realise how difficult it would be to reach this target. While North America has shown an annual increase in food production of 2 per cent which in itself is below par, Europe can claim a rise of only 1 per cent and the Far East of 0.42 per cent. The increase in the production of rice, the staple diet of a large slice of the world population, is only 0.1 per cent.

India, like the rest of the world, has also shown a phenomenal rise in her population. India's food production has been stepped up considerably, but certainly not to the extent of being able to meet her total requirements. Undoubtedly, more and more uncultivated land is coming under the plough as more and more water is becoming available for cultivation and, as a consequence, more food and money-crops will be grown. But even with all the anticipated increase, we may still not be able to cope with our requirements of food stuffs and other prime necessities of life like clothing and shelter unless the supplies of these keep up with the increase in population. Either the supply must increase or the demand must decrease. Food production in India cannot increase beyond a certain limit. At present any shortage in food stuffs has been met by emergent imports from abroad. But if the total world population is also increasing at a rate which outstrips the rate of increase of total world production of food stuffs, it is evident that India will not be able to

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secure her requirements from other countries even with the best will in the world. At times it may not be possible to avail ourselves of foreign aid, if our foreign exchange currency position does not allow it. Once this was realised it became necessary to think in terms of other approaches to the problem. One, of course, was to effect an increase in the production of food and other necessities which must be allowed to run ahead of the possible increase in the population. Another was to put curbs on the increase in population so that there can always be more food to go round.

In olden days, in India as elsewhere, the population was prevented from increasing by wars, pestilences and natural calamities. Today, improved public health measures and new therapeutic agents have lowered the incidence of disease, reduced infant and adult mortality and raised the expectation of life. The world is attempting to outlaw war and India is in the forefront of those who are striving towards attaining this objective which will save millions of lives. Large schemes for the control of floods and ameliorative measures against famines are also contributing towards increasing both the ability and the will to live longer. If, therefore, there is to be a sufficiency of life's necessities and if the standard of living of the Indian people is to be raised, it is necessary to decrease the pressure on available and potential resources.

Limitation of families is a method acknowledged throughout the world for keeping the population figures within bounds so that they may not over-reach resources. Independent India realised it too as is evident from Prime Minister Nehru's statement that "we should be a far more advanced nation if our population were about half of what it is." It was the first time that a Prime

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Minister of a Sovereign State had not only made a statement to this effect but also set in motion forces to ensure that the future population rise would not be so steep as to nullify the good effect of the gradual increase in production that India was aiming at under the two Five Year Plans.

Even in the First Five Year Plan a positive approach was made to this problem. The policy, as enunciated in the plan, aimed at a reduction in the rate of growth of the population and considered that family planning or spacing of children was necessary and desirable and would ensure better health to the mothers and better care for the children.

The methods for attaining the objective were the education of the lay public in family planning, research in the efficacy of different methods, and the provision of centres for giving advice on the subject. Following this a Family Planning Research & Programmes Committee was appointed under the chairmanship of the Director General of Health Services to go more thoroughly into this matter and make recommendations.

The Committee's report submitted in 1954, clarified the Government stand and specified that the dual objectives of the plan were family welfare and population control and that these could be attained by providing the individual family with the knowledge and skill necessary to facilitate the spacing of births and thus secure a reasonably rapid control over the birth-rate.

The Committee emphasised that the Government's family planning programme may not be conceived in the narrow sense of birth control or merely, as a spacing of

the birth of children. "The purpose of family planning" the Committee averred "is to promote, as far as possible, the growth of the family as a unit of society in a manner designed to facilitate the fulfilment of those conditions which are necessary for the welfare of this unit from the social, cultural and economic point of view. The functions of a family planning centre, if it works on a comprehensive basis, will include sex education, marriage counselling, marriage hygiene, the spacing of children and advice on such other measures as may be necessary to promote the welfare of families as, for instance, advice on family budgeting. Advice on infertility should also be a part of family planning programme". While this was the ultimate ideal, the immediate course of action, they recommended was family limitation and the spacing of children.

Other recommendations dealt with were the location of family planning centres which, they felt should be established and work in close association with M.C.H. clinics; encouragement of activity by voluntary agencies through grants-in-aid; education for family planning; field studies; establishment of a centre for the testing of contraceptives; research on rhythm methods and contraceptives.

The Committee then set about the task of making individual allocations under nine heads out of the Rs. 65 lakhs provided under the First Five Year Plan. Altogether Rs. 9,15,015 were provided to State Governments, local bodies, voluntary organisations and for research in 1954-55 and Rs. 8,43,415 in 1955-56.

In the beginning of 1954 there were about 181 family planning centres in India. These were both inadequately

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staffed and financially ill-off. Under the First Five Year Plan, financial aid was offered for opening 205 family planning clinics. The State Governments received aid in respect of 96 clinics; and voluntary organisations and local bodies in respect of 80 and 29 respectively. Of these 146 were actually opened. Grants-in-aid for family planning work were given to 15 State Governments, 35 voluntary organisations and 8 local bodies as well as to research organisations.

A Family Planning Board with the Union Health Minister as Chairman has been formed to advise the Ministry of Health on all matters relating to the Family Planning Programme including research and studies in its different aspects, educating public opinion, integrating family planning into public health activities through hospitals, health centres and clinics, and provision of facilities for the training of personnel.

Under the Second Five Year Plan out of a total allotment of Rs. 497 lakhs for Family Planning a sum of Rs. 14 lakhs has been provided for the continuance of the clinics opened during the First Five Year Plan period. It is proposed to open altogether 2,500 clinics, 500 in urban areas and 2,000 in rural areas. The phased programme for opening clinics both in rural and urban areas is estimated to cost about Rs. 353 lakhs. Each clinic will serve a population of 50,000 in the urban and 66,000 in the rural areas. In rural areas, the centres are to be associated with the Primary Health Units.

In order to provide the necessary staff for the large number of clinics to be opened, training programmes have been instituted and a provision of Rs. 15.75 lakhs has been made for them in the Second Five Year Plan.

For its ultimate success any large scale programme requires scientific data based on pilot studies. Such pilot studies in this subject were undertaken in 1952 with technical assistance from the W.H.O. These were undertaken in two places, the Lodi Colony in New Delhi—a model urban residential area, and the small rural villages in the Ramanagaram Health Centre area, in the State of Mysore. An investigation was carried out into the possibility of introducing the rhythm method of birth control. The results showed that more than 70 per cent in touch with the family planning units expressed a desire to know about family planning methods. A considerable part of the study was vitiated due to the residents moving away from the locality as in Lodi Colony or to a far too long lactation period as in Ramanagaram. The studies showed that the rhythm method has a limited appeal because of the restraint it requires and may not be able to provide the main plank in family planning even though, if practised intelligently, it can be successful. A large scale use of other effective and cheap methods of contraception will therefore have also to be introduced.

The Family Planning Board held its first meeting on the 27th October 1956 under the chairmanship of Rajkumari Amrit Kaur, Union Minister for Health. Under the policy enunciated by the Chairman, the family was to be considered as a unit of society which had to fulfil itself from both the social welfare and cultural points of view. Conditions had to be created for its encouragement and this could only be undertaken on a wide basis by the State Governments and local bodies to whom financial assistance had to be given.

Under the programme set out by the Board, a training centre is to be opened in every State and suitable candi-

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dates sent abroad for training. The education of the public is delegated to the Central Health Education Bureau. The medical and biological side of research is to be undertaken by the Indian Council of Medical Research. Fundamental research in demography is to be carried out by a Demographic Training and Research centre.

The training of medical and auxiliary personnel had to be undertaken not only in family planning centres but also in the health visitors' and nurses' training centres and in the reorientation training centres in Najafgarh, Poona-mallee and Singur. A number of short courses would ensure a larger output of trained personnel.

An important decision taken by the Board at this meeting was the appointment of a Standing Committee to implement the Board's policies and to scrutinise and sanction the various proposals relating to the family planning schemes, and to deal with other cognate matters on behalf of the Board.

The Standing Committee held its first meeting on the 19th January 1956 under the chairmanship of the Secretary of the Ministry of Health when it laid down conditions for the grant of aid to voluntary organisations, local bodies and State Governments. It considered schemes submitted by State Governments, local bodies and voluntary organisations, for the opening of 98 rural clinics and 105 urban clinics in 1956-58 of which 79 and 62 were approved respectively.

The Family Planning Programme depends *inter alia* on the availability of contraceptives to those wanting to use them. This was to be met by the Committee's deci-

sion to sanction Rs. 500 as a non-recurrent grant to centres for stocking and selling approved contraceptives on a no profit basis to persons drawing Rs. 100 or more; while persons with an income of not more than Rs. 100 were to be provided with foam tablets, free of cost. For this a recurring grant of Rs. 1,000 was to be given to each clinic opened during the First and Second Five Year Plan periods.

As regards the recruitment of social workers and public health nurses, the shortfall was to be met by lowering, where absolutely necessary, the minimum qualifications for field workers, health visitors and medical and social workers.

A programme of this magnitude can not be based on generalised hypothetical assumptions and requires to be placed on a scientific basis. For this, three things were felt to be necessary—demographic research, biological and medical research and a programme of training.

Three centres for demographic research at the Indian Statistical Institute, Calcutta, the Delhi School of Economics and one in South India are to be established. Apart from this the Government of India have sanctioned the establishment of an autonomous body known as the Demographic Teaching & Research Centre at Bombay, in collaboration with Sir Dorabji Tata Trust, further development to be undertaken in collaboration with the United Nations Organisation. This Centre is located at Chembur, Bombay.

The Centre is to be developed into a regional training centre during 1957 and the first batch of six foreign students are expected to be admitted this year. U.N. coope-

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ration will go towards providing equipment and establishing a library and providing for the services of a demographer for two years.

Large scale biological and medical research has also been taken in hand. Amongst the research schemes sanctioned may be mentioned the development of contraceptives from indigenous materials, biological and clinical testing of contraceptives and field trials with foam tablets. Contraceptives are being tested at the Indian Cancer Research Centre under the direction of Dr. V. R. Khanolkar. Other studies on contraceptives being conducted elsewhere, include research on oral contraceptives at the All-India Institute of Hygiene and Public Health, Calcutta. Field studies are being conducted on the use and effectiveness of foam tablets at various places.

On the training side, a Central Training and Research Institute is going to be established at Bombay. This institute will impart training of a high standard in family planning to doctors and other technical staff. Pending its establishment, short term training courses for 2—3 weeks have been conducted at New Delhi and other places.

India is the first country to adopt an integrated broad-based nation-wide family planning programme under State auspices. This vast programme is not confined to birth control measures alone. It considers the family and not the individual as a unit for all social progress and believes that its development will improve the tone of the entire community and of the nation as a whole. The eyes of the world are turned towards India to watch with interest the effect of her measures on population control and for setting up a higher and better standard of living. It is no haphazard experiment. It is a national programme organised by the State and it is also a great pioneer effort.

The Quest for Quality

The Health Survey and Development Committee had recommended, *inter alia*, the establishment of an All-India Medical Institute to develop patterns of teaching

- (a) in under-graduate and post-graduate medical education in all its branches so as to demonstrate a high standard of medical education to all medical colleges and other allied institutions in India;
- (b) to bring together in one place, educational facilities of the highest order for the training of personnel in all important branches of health activity; and
- (c) to attain self-sufficiency in post-graduate medical education.

An institution at the Centre of this kind was to be the coping stone of the entire edifice of medical education in India. The main object of this institute was, to bring together under one roof, facilities for the training of medical and health personnel like doctors, dentists and nurses and to afford facilities for medical research. Later, other colleges were to be added to this to deal with subjects like pharmacy, public health engineering, physiotherapy and occupational therapy and medico-social work. The central institute was to set the tone for all medical institutions in India both in under-graduate and

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post-graduate studies and to evolve suitable curriculae for under-graduate studies applicable to India.

The cost of the establishment of such an institute and its running expenditure till 1961 is estimated to come to over Rs. 6 crores. A substantial help of one million pounds sterling, or (Rs. 1.33 crores) has been promised by the Government of New Zealand under the Colombo Plan and will defray nearly a quarter of the total expenditure. Originally the institute was to be located near the Irwin Hospital and even the foundation stone was laid at that site on the 4th April 1952 by Dr. J. T. Watts, Minister in the New Zealand Government. Later a committee, with Dr. Lakshmanswamy Mudaliar as chairman, which was set up to examine the organisation and general planning of the institute, decided that the site near the Irwin Hospital was too cramped and unsuitable for a large scale project which not only had to house the two main institute buildings, but also ancillaries like the dental and nursing colleges, the nurses' and students' hostels and staff quarters.

The site originally selected was near the Irwin Hospital and lay within a developed area. But the new site near the Safdarjang Hospital was an undeveloped piece of land which required filling and levelling and the construction of a compound wall around the entire campus. Essential services to be provided included a filtered and unfiltered water supply, sewerage and drainage, roads and lighting. The development, which alone cost about Rs. 2.0 lakhs, is now complete and quite a number of super-structures have already gone up. The completed constructions include the College of Nursing and affiliated buildings like godowns and garages, an electric sub-station and some 556 residential quarters for various

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grades of senior, junior and lower grade staff. The work on which construction is nearing completion are the Nurses' Home, the Recreation Hall in the College of Nursing, the two Women's Hostels and the staff and students' dining hall and kitchen block. Work is in progress on the construction of the preclinical block, two of the men's hostels, and some 300 staff quarters. The work, however, in regard to the main teaching block and hospital, the dental college and the two blocks of hostels for under-graduates is still to be taken in hand.

To accelerate the tempo of construction, primarily on the main block, but also in the other buildings in the campus, the Building Committee has been reconstituted and wider powers have been delegated to the Joint Secretary, Ministry of Works, Housing & Supply, to enable him to coordinate and speed up the work of the various agencies engaged in this enterprise.

Meanwhile, teaching work has not been neglected. Instead of waiting for the completion of the whole project, advantage has been taken of the completed block for opening classes for under-graduate medical students. Fifty students from all over India were admitted in September 1956, of these nine are girl students. They were selected on the basis of a Competitive Examination held at five different centres in India. A post-graduate training course in Orthopaedics was started on 16th April, 1956 in association with the Safdarjang Hospital with two students. Post-graduate courses in other departments of medicine and surgery will be undertaken as soon as accommodation in the main building becomes available.

Recruitment of staff for this premier institution presented a major problem. The different teaching posts were

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advertised in the press in India and abroad including the U.K. and United States of America so that the best Indian talent could be secured. Candidates, who were abroad, were interviewed by committees in two places, namely, in London and in New York. The selection committees were assisted by eminent doctors, with Dr. A. L. Mudaliar as the chairman. The final selection of the various professors, associate professors and others was made after taking into consideration the recommendations made by all the three Committees. No technicians, professors or any other staff have so far been deputed to the Institute by any foreign country. The eleven appointments made up-to-date include the posts of Professors of Orthopaedics, Physiology, Pharmacology, Bio-chemistry and Radiology; additional Professors of Anatomy, Pharmacology and Physiology, an Associate Professor of Biochemistry, and two Assistant Professors, one each for Orthopaedics and Bio-chemistry respectively. Of these only six have joined so far.

It is a truism that all economic development is ultimately based on the human element and need therefore depend on the continued well-being of all those who are engaged in the various schemes and of their dependents. Medical education '*per se*' and all ancillary activities are, therefore, a basic necessity for providing doctors, public health workers, nurses and others necessary for the carrying out of the health schemes under the Five Year Plan. In the absence of adequate medical relief and health and hygienic projects, all our best laid plans for economic development will come to nought. Indirectly, therefore, the project will contribute to the economic development of the country.

The Institute will satisfy a long felt want, that of ful-

filling the aspirations of students all over the country for post-graduate studies. Instead of a mere handful going to foreign countries for post-graduate training a large number of students will be able to receive higher training in this institution.

If example is better than precept the Centre's establishment of the All-India Institute of Medical Sciences is sure to raise the standards of medical education in India if, of course, its example is followed by the various States. The standards of medical education unfortunately vary from State to State. A certain amount of wastage is to be observed between the number of admissions to medical colleges and the graduations. The fault does lie somewhere. Sometimes it is that the candidates are unsuitable material for the medical profession or the pace proves too much for them and they drop out before graduation or else take a much longer time to assimilate what is the normal five years training. Perhaps the methods of examination are faulty and tend to serve much more as a test of memory than of the practical application of what has been learnt. It may even be that the methods of teaching are faulty in themselves. Be that as it may, the cumulative results of all these is that the output of doctors suffers *both in quality and quantity*. The Centre with its coordinating and advisory function therefore, felt constrained to take some positive step if the schemes for medical relief and health and hygiene, projected under the two Five Year Plans, were not to suffer. On the 31st of May 1954 a two-day informal meeting was held under the joint auspices of the Government of India and the Rockefeller Foundation when a small body of eminent doctors and medical educationists got together to consider the question of holding a medical education conference on an All-India basis.

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The Medical Education Conference was held in November 1955. At the inaugural session presided over by Rajkumari Amrit Kaur, the Central Minister for Health, important speeches of policy were made by the Prime Minister, by Dr. B. C. Roy and by the Health Minister herself. The three important problems that faced the medical educationists in this country were clearly enunciated as paramount for raising and maintaining the standard of medical education in India. Every aspect was covered, pre-medical studies, under-graduate training and examination for graduation. Quite interesting suggestions were advanced at the conference. For instance, the sub-committee on examinations recommended that written examinations should be reduced to a minimum and if possible even eliminated, and further that the accent should be on practical and oral tests. An interesting suggestion from the chair was for the creation of an Inter-University Examination Board which would eliminate variation in graduation standards from region to region.

In all, ten resolutions were passed. These covered such wide subjects as the criteria for the selection of students for admission to medical colleges, pre-medical studies and entrance requirements, the subjects of study and curriculum hours and the assessment of the students' progress by means of examinations which, according to the conference, required a considerable overhaul. An important recommendation was the establishment of a department of Preventive and Social Medicine in every medical college which would start giving training in these subjects right from the first year to and including internship. Paediatrics and psychological medicine were considered important enough to be included in the curriculum right from the commencement of medical studies. A far reaching recommendation was the improvement of the

teacher-student ratio in medical colleges and the appointment of full time teachers.

Though the conference realised the inadequacy of the present system of medical education and the urgency of taking early steps to remedy some of these deficiencies, it also realised that precipitate action was to be avoided. The conference approach to the problem of medical education was constructive and flexible. It emphasised the necessity of making an objective assessment of the various improvements that were likely to be introduced by various institutions so that common ground could be found for them. The various resolutions passed should, it was decided, be circulated to the universities, medical colleges and other teaching institutions and to the Medical Council of India so that these institutions and bodies might take up the matter from a constructive angle. This conference attracted considerable attention both from Indian medical educationists and from international bodies and foreign governments.

Nursing

The nursing profession is not new to India. Even in the time of Asoka*, hospitals had attendants who had specific duties assigned to them. There was even a code laid down both for the qualification and the behaviour of nursing personnel working in these hospitals. But with the decline in the popularity of hospitals themselves, the male nurses also tended to disappear and nothing seems to have been done to encourage the growth of the profession in India till the 19th century. Even then, professional nursing appears to have been confined only to hospitals and institutions, and there were no public health nurses even in towns and cities. In the rural communities of India, neighbours came to help when there was sickness in a family. Such nursing as was done devolved on women. Deliveries were attended to, as they still are, by the indigenous midwife, the dai**. Masseurs and masseuses also existed and gave massage.

Nursing as a profession has developed slowly in India. In 1946, there were only 7,000 nurses in India each serving a population of 43,000 while, according to the standard set by the Bhore Committee, there should be one nurse for every 500 of the population and therefore no less than 7,40,000 nurses would be required for the entire country. The then Government of India adopted a systematic policy for increasing the provision of facilities for training a large number of nurses of all categories and took steps to

* Emperor of India, 272 BC to 232 BC.

** An Indian term for midwife.

standardise training programmes. They also established a College of Nursing in Delhi in 1946. This College gives a four years' course in nursing, post-certificate diploma courses in teaching and administration and courses for ward-sisters and midwife-tutors. In order to provide facilities for training and experience in rural areas to the students of the College of Nursing, training centre was established in the health centre at Chawla village in Delhi in 1951. This centre serves a population of about 6,300 persons.

Attached to the College of Nursing is a Child Guidance Clinic established in March 1955. The main function of the Clinic is to render psychological services to the community as a part of public health services and to provide for students of the Nursing College facilities for practical training and experience in this field. The Clinic, in co-operation with the Department of Paediatrics, Safdar-jang Hospital, New Delhi, is now engaged in conducting tests on mentally deficient children to assess their intelligence prior to, during and after treatment.

In 1949 the Indian Nursing Council was constituted for establishing uniform standards of education and training for nurses, midwives, health visitors, etc. The Council has so far laid down syllabi for a B.Sc., degree course in nursing, for courses in respect of general nursing and midwifery as well as for health visitors, auxiliary nurse-midwives and dais, and also for post-certificate courses in nursing.

The Government of India approved in 1951-52 a scheme submitted by the Andhra Mahila Sabha Trust Board, Madras for the establishment of a nursing-home-cum training centre for auxiliary nurses and midwives at Madras. This scheme was included in the First Five Year

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Plan and out of the estimated cost of Rs. 2·9 lakhs upto the end of 1955-56, an expenditure of Rs. 2,79,130 was incurred on this scheme. Twelve candidates admitted under the scheme have completed the auxiliary nurse-midwives course. A special *ad hoc* grant of Rs. 1·25 lakhs was also paid to the Andhra Mahila Sabha Trust Board during 1954-55 to enable the Sabha to purchase a building for the accommodation of auxiliary nurse-midwives. This institution is training auxiliary nurse-midwives for employment in community development projects and in social welfare extension projects.

A Centrally-aided scheme was included in the First Five Year Plan for training midwives and auxiliary nurse-midwives for employment in community development projects. This scheme will be continued in the Second Five Year Plan. There are at present 6 approved training centres for midwives and 39 approved training centres for auxiliary nurse-midwives under the scheme. The total number of candidates trained or under training (as on 31st October, 1956) was 140. It is proposed to continue the training of about 6,000 more by the end of the Second Five Year Plan. This will be done either by expanding training facilities in existing training schools or by establishing new ones. A total provision of Rs. 89·00 lakhs to be shared equally by the Central and State Governments has been made in the Second Five Year Plan. A budget provision of Rs. 8·99 lakhs has been made for this scheme during 1956-57. A provision of Rs. 10·00 lakhs is proposed to be included in the budget for 1957-58. At the Lady Hardinge Medical College and Hospital, New Delhi, provision was made for the training of 35 additional student nurses, Rs. 94,000 being provided for this purpose in the First Five Year Plan. The training of

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this additional number is being continued by the hospital at its own cost.

In pursuance of the resolution passed at the second meeting of the Central Council of Health held at Rajkot in February, 1954, a Committee was appointed by the Government of India under the chairmanship of Shri A. B. Shetty, Minister of Health, Madras to review the conditions of service, emoluments, etc., of the nursing profession. The report of this Committee has been circulated to all State Governments and has proved to be of great value in focussing attention on the various factors that have handicapped the development of a good nursing service and also on the necessity of taking practicable measures to remedy the defects.

Maternal and Child Welfare

Embodied in the classical Sanskrit Mantra* "Matri Devo Bhava" is the sentiment of every Indian which places the mother element as above everything else, a noble sentiment to which only lip service has been paid till recently if maternal mortality figures in India are any criterion. Before 1947, it is estimated that about 200,000 mothers died in childbirth every year. Apart from these deaths there was also the question of the disablement and long lasting ill-health of many of those that survived. The Health Survey and Development Committee said in their report that "Women suffering from varying degrees of disability and discomfort as a result of child-bearing must be very much larger, probably about four millions". In comparison, infant mortality in some other countries lay between a third and fifth of the India figure and the maternity death rate 3 or 4 per mille of live births as against India's estimated rate of 20 per mille. Nearly a quarter of the total deaths are of children under one year of age, approximately 40 per cent of the deaths are of children under ten years of age, an appalling waste of life which requires an intensive effort if the causes are to be eradicated and the figures brought down.

Prior to August 1947, only a few States had any organised plans for developing health services for mothers and children. The States of Madras, Bengal and Orissa did have a Maternal and Child Health Section in their

* An incantation in Sanskrit, the ancient classical language of India which makes the mother the first amongst gods and goddesses.

Directorates of Public Health for giving technical advice to the field staff and to the local bodies engaged in establishing and maintaining the services. But by far the largest amount of work was done by voluntary organisations namely the Red Cross and others, the Bombay Mother and Children's Welfare Society, and the Bihar Maternity and Child Welfare Committee. In certain States more than one agency carried out maternity and child welfare work with the result that their efforts were uncoordinated and, quite often, they so overlapped as to be wasteful. Quite a number of private agencies have been active in this field and, even as early as 1866, the Zenana Mission commenced its activities; and the Dufferin Fund Committee established in 1885 has ever since been instrumental in providing medical aid to Indian women through women doctors. The Victoria Memorial Scholarship Fund Committee established in 1902 to improve midwifery services had collected funds for the training of indigenous *dais*, the Lady Chelmsford All-India League for Maternity and Child Welfare established in 1920 had also collected funds for the purpose and these two bodies did a considerable amount of work in the realm of maternal and child Health. In 1931, a Maternity & Child Welfare Bureau was established under the aegis of the Indian Red Cross Society to provide technical assistance to voluntary and governmental agencies to promote maternity and child welfare services and to administer these two funds. For over half a century various agencies had thus been working for ensuring better services for mothers and children and had established nuclei of services for this purpose. Their work could not but be slow and spasmodic and primarily due to lack of funds and technical personnel, limited in scope.

In the year 1933 a special course in public health was

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established at the All-India Institute of Hygiene & Public Health, Calcutta, to enable women doctors to specialise in this field of public health.

It is evident from the Bhore Committee's report that it was felt to be a matter of great urgency to attend to the services for mothers and children in our nation building programmes. The work was consequently taken in hand soon after independence. Considerable progress has been made during the last 9 years in the expansion of the services and in the training of various categories of staff required to man these services. The work done earlier was well intentioned and enthusiastic but lacked that cohesive effort on the part of agencies in the field, whether Government or private, which could enable them adequately to cope with what was really an all-India problem.

The first step taken, therefore, was to establish maternity and child welfare bureaux in the States and a special section at the Centre to give guidance to the State bureaux and to coordinate the activities in the States to ensure uniformity of policy and programmes in promoting health and welfare services for mothers and children throughout India. With large scale programmes projected under the two Five Year Plans and external assistance in the way of material and technical knowledge, which was readily forth-coming from International bodies like the W.H.O. and UNICEF, it has been possible greatly to step up the services. Almost every State in India has today has a maternity and child welfare bureau at State level.

At the instance of the Central Government the World Health Organisation has provided technical experts and the United Nation Childrens' Fund essential equipment for launching comprehensive programmes in the States.

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The health services of mothers and children form an integral part of the health programmes in the wide-spread community project areas.

The first essential in launching these programmes was to train technical staff, of which there was a great paucity. How this hurdle is being crossed is in itself interesting. A Department of Maternity & Child Welfare had existed at the All-India Institute of Hygiene and Public Health, Calcutta since 1933 but the number of doctors trained in maternity and child welfare was extremely small. The Government of India, therefore, enlarged the existing facilities at the Institute sufficiently to provide postgraduate training to about 60 doctors and nurses from India as also from the neighbouring countries of South East Asia. The two International bodies assisting in this expansion programme, as well as the Central Government, provided fellowships to be awarded to candidates sponsored by the States, both doctors and nurses being eligible. Short orientation courses are also provided for staff who are already working in the maternity and child welfare programmes in the States.

As the health programmes in the Community Projects and the National Extension Services required a large number of health visitors to man them, training programmes were expanded in the existing nine health schools in the different States and in the Lady Reading Health School in New Delhi (originally started by the Indian Red Cross Society but now run by the Central Government). They were expanded to train 600 health visitors during the First Five Year Plan. Assistance was given to States for expanding hostel and class room accommodation and for additional equipment and staff. The target for the Second Five Year Plan is the training of 1,700 health

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visitors. The Government of India are providing assistance to States in their plans for the expansion of the existing schools still further and for the establishment of new schools in other States. The Health Visitors' training course has been considerably improved by establishing a 2½ years' integrated course to provide instruction in elementary nursing, midwifery and public health.

During the First Five Year Plan period, the Centre assisted the State Governments in the training of midwives, sufficient to allow a staff of 4 midwives for each block of 100 villages in Community Projects. The Second Five Year Plan provides for the training of at least 6,000 midwives. The midwifery course which had an eighteen month duration has since been extended to a period of two years as an auxiliary nurse-midwifery course to include training in elementary nursing and midwifery. Short orientation courses have been developed in the States for doctors, nurses, health visitors and midwives so that they can be better equipped to render the health services under the State development programmes. The States of Bombay, Andhra Pradesh, Bihar, Mysore, Madhya Pradesh and Kerala have active programmes of training. Field experience is ensured by conducting the training in a health centre. Special orientation courses are also provided for doctors and nurse-teachers. Paediatric services being an important part of maternity and child welfare services, improvement of training in paediatrics has been included in the State projects. Assistance has also been provided to the States in the Second Five Year Plan for improving paediatric training at Medical Colleges. Five Centres are to be established with Central assistance for developing undergraduate paediatric training. Each Centre is to receive Central assistance to the extent of Rs. 9 lakhs. Provision has also been made for

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assisting certain medical colleges to upgrade the department of paediatrics in order to offer post-graduate training and to train teachers in this very important branch of modern medicine.

With assistance from International Organizations, steps have been taken to provide standard equipment, drugs and diet supplements to both existing centres as well as to any new ones established under the community development projects, State maternity and child welfare programmes and under schemes for expansion of maternity and child welfare services particularly in certain backward areas.

UNICEF have provided equipment to 1832 centres. The assistance has been useful in raising the standard of existing services and in effecting standardisation of the staffing pattern of the existing and new centres.

There were approximately 1,200 maternity and child welfare centres in 1947. Under these expansion schemes we have another 1,800 centres, making a total of approximately 3,000 centres. Two hundred maternity & child welfare centres, each serving a hundred villages, were established in the States under Central assistance for which Rs. 50 lakhs were earmarked in the first Five Year Plan.

Comprehensive development programmes for maternal and child health services were undertaken and are functioning in the twelve States of Delhi, Saurashtra (now in Bombay), Hyderabad, Andhra, Travancore-Cochin (now Kerala), Bombay, Uttar Pradesh, Madhya Pradesh, Assam, Bihar, West Bengal and Mysore. The Delhi project has since been completed. UNICEF assistance to these projects has been considerable, amounting to

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between \$150,000 to \$200,000 per project. The W.H.O. has provided essential personnel to train and assist Indian staff. These comprehensive material and child health projects aim at improving and increasing facilities for the training of health personnel for the development of health services to mothers and children.

It is now being increasingly realised that maternity and child welfare services must form an integral part of the health services of the area if they are to be effective. Such services now form a part of the health programmes in all development blocks.

So much for the steps taken, the projects initiated and personnel trained. What has been the outcome? If judged from the expansion of programmes, there is evidence of considerable interest being shown by State authorities and the public in undertaking health programmes for mothers and children. Maternal and infant mortality rates have been reduced as a result of these developments. Though the number of mothers that die as a result of child birth is still higher than in western countries where the services have reached a high standard, the maternal mortality in the urban areas of India is now about two per 1000 live births as compared to 20 per 1000 live births just over two decades ago. The infant mortality rate has also shown a steady drop since maternity and child welfare services were first launched in 1921. The decline curve has been quite steep since 1947 indicating that the existing programmes are proving effective. The infant mortality rate which in 1921 was approximately 200 per 1000 of live births and was 150 in 1947, was 110 per 1,000 live births in 1955, *a decline in eight post-independence years almost equalling the decline in the 36 years from 1921 to 1947!*

The C. H. S. Scheme and Hospitals in the Capital City

Delhi is the first city in India to have introduced a scheme for the provision of medical facilities on a contributory basis. The Contributory Health Service Scheme which has now completed two years of satisfactory functioning covers all Government servants other than the Defence Services and Railway personnel, irrespective of their pay or status. Under the scheme, all classes of government servants and members of their families are entitled to free medical treatment in hospitals and dispensaries and, when necessary, at their residences. Women officials and women members of a contributor's family are attended to by women staff surgeons and assistant surgeons. Special treatment or specialist consultation is also provided free of charge. The Central Government servant who participates in the schemes does not have to pay for medicine and treatment whether in hospital, dispensary or at home. In some special cases treatment is allowed at places other than the two hospitals attached to the C.H.S. Scheme, the charges incurred being paid directly by the Directorate General of Health Services on presentation of the bills.

The enlarged definition of the term 'family' includes the parents of the government servant who are dependent on and residing with the member of the C.H.S. Scheme, the other members of family so entitled being the wife or the husband as the case may be, children or step-children.

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The advantages of this scheme over the old system are many. Previously, government servants used to get treatment and then claim reimbursement from the government, payment of which was quite often considerably delayed. This caused untold hardships to those in the lower income groups, who could neither incur the initial expenditure nor, when incurred, wait too long for reimbursement. Prior to the introduction of the Contributory Health Service, the class IV Government servant was not entitled to the free services of the authorised medical attendant at his residence, however serious his illness might be. Under the new scheme these conditions have changed for the better. Now the Central government servant can rely on getting medical attention and medicaments without any payment because he is insured against it by paying a small monthly graded contribution which is fixed in relation to his income and which entitles him and the members of his family to obtain medical facilities.

Like all new and progressive projects the C.H.S. Scheme also met with initial opposition. The grounds for this were many and varied, the chief being the conservative attitude which liked to follow a policy of *laissez-faire*. However, Government thought the time was ripe to introduce in the capital city and in the Central Government offices, a pioneer scheme which might in time serve as a model to similar schemes in other places in India. That the contribution would not meet the cost of the scheme had been foreseen; but its advantages far outweighed the possible losses to the Exchequer. The actual figures in this respect are illuminating. In 1955-56 a provision of Rs. 28,15,000 was made in the budget grant for this scheme. The contribution realised from the government servants other than those in Defence, Railways and

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the Posts & Telegraphs was Rs. 7,01,867. These three ministries paid a lump sum contribution on the basis of the actual number of employees taking advantage of the scheme, was Rs. 9,09,445. Other semi-government institutions which had been included in the scheme at their own request contributed Rs. 58,755, the total receipts on the three accounts being Rs. 16,70,067. There was thus a shortfall of nearly Rs. 12 lakhs. The recoveries are made on carefully graded scales ranging from Rs. -/8/- to Rs. 12/- per month depending on the pay of the government servant. The rates are as follows:—

<i>Graduation according to pay</i>	<i>Rate of monthly contribution</i>
Rs.	
1. Rs. 2000/- and above	12/-
2. From Rs. 1500/- to Rs. 1999/-	9/-
3. From Rs. 1000/- to Rs. 1499/-	6/-
4. From Rs. 750/- to Rs. 999/-	5/-
5. From Rs. 500/- to Rs. 749/-	4/-
6. From Rs. 250/- to Rs. 499/-	2½/-
7. From Rs. 151/- to Rs. 249/-	1½/-
8. From Rs. 76/- to Rs. 150/-	-/12/-
9. Upto Rs. 75	-/8/-

Those semi-government organisations and institutions whose employees come under the scheme, pay contribution at the rate of Rs. 65/- per head per annum or at the rates payable by the Central Government servants on a comparable pay, whichever is higher.

That the scheme has proved successful is beyond doubt. In the beginning there were only 2,23,000 beneficiaries including 53,000 Government servants. Now the figure has

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risen to 3,20,000 of whom 88,000 are Government servants. In the first week of July 1954, there were sixteen dispensaries functioning under the scheme including the outpatient departments of the Willingdon and Safdarjang Hospitals. The number of dispensaries have now increased to nineteen. The average daily attendance at the dispensaries and hospitals and outpatient departments was 2,636 in July 1954 i.e. the first four weeks of the Scheme. It has since then shown a steady rise, the peak figure to date being 11,582 during August 1956. The monthly attendance in July 1954 was 76,444. Two years later, for the month of July 1956, it more than trebled itself and stood at 2,71,143 and in August 1956 it touched a new height at 2,89,545. Apart from the 19 static dispensaries scattered over Delhi and New Delhi, there are three mobile vans which cater to the needs of government employees residing in outlying areas. Even then the increase has not kept pace with the popularity of the scheme which requires considerable augmentation, and steps are being taken to increase the facilities under the scheme.

Hospitalisation of beneficiaries is done in the two hospitals in New Delhi viz. the Willingdon Hospital and Nursing Home and the Safdarjang Hospital. There is no charge for the treatment of beneficiaries in these hospitals but when it becomes necessary, patients are permitted to be sent for treatment to private or recognised institutions. In this latter case, government pays for such treatment on presentation of bills. During the year 1955-56 for instance, the admission into private or recognised institutions numbered 3,087 maternity cases, 108 cases of infectious diseases and 180 cases of an emergent nature requiring special treatment. During the year 158 T.B. patients were admitted to recognised sanatoria.

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For providing free medicine, a Medical Store Depot has been set up in Safdarjang Hospital to meet the normal requirements of dispensaries. Specially prescribed items which are not in stock are however purchased in the local market. The direct purchase of medicines by beneficiaries from private firms and the claim for subsequent reimbursement has been discontinued.

With the introduction of the scheme, free diet for hospitalised Government servants whose basic pay is less than Rs. 100/- per month and for in-patients from their families was allowed. The concession has since been extended by raising the pay limit scale to Rs. 130/- per month. In the case of T.B. patients, free diet is supplied to Government servants and members of their families, when the basic pay of the Government servant is less than Rs. 300/- per month.

The scheme has now been made applicable to members of the family of Government servants who may fall ill outside Delhi even if the officer is stationed in Delhi. Officers with headquarters outside Delhi and New Delhi, who are posted in Delhi can also benefit under the Scheme. Even gazetted officers working in an honorary capacity in the Government of India in Delhi and New Delhi are entitled to C.H.S.S. benefit, the administrative Ministry or office paying the prescribed contribution.

The Contributory Health Service Scheme has been extended from time to time to include the employees of semi-government organisations. Eight such now receive the benefits. These are:

1. The Council of Scientific and Industrial Research.
2. The University Grants Commission.
3. The Employees' State Insurance Corporation.

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4. The Hindustan Insecticides Ltd.
5. The National Physical Laboratory, Delhi.
6. The Central Board of Irrigation and Power.
7. The Central Road Research Institute.
8. The Indian Standards Institution.
9. The Central Provident Fund Commissioner.

More than twenty other organisations have pressed for inclusion in the scheme but their requests could not be immediately complied with and they have now to await the projected increase in dispensaries and the staff before any action can be taken for their inclusion.

The Centrally maintained General Hospitals in the Capital City

The Central Health authorities run the Willingdon Hospital and Nursing Home and the Safdarjang Hospital. The former came under the control of the Central Government from the 1st of January 1954 and the latter exactly two months later.

The Willingdon Hospital at the time it was taken over had only 32 beds, with an additional 18 beds in the Nursing Home. The present bed strength is 69. The increase in the bed strength and in the number of hospitalised and outpatients is as stated in the table below:

	1954		1955		1956	
	Nurs. Home	Hosp.	Nurs. Home	Hosp.	Nurs. Home	Hosp.
No. of Indoor patients	530	983	589	949	619	1,346
No. of attendance at O.P.D (New)	..	92,941	..	87,940	..	87,023
No. of attendance O.P.D. (Old)	..	1,16,295	..	1,54,230	..	1,58,539
No. of beds	18	32	20	40	20	49

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In the First Five Year Plan a provision of Rs. 19·20 lakhs was made for capital and non-recurring expenditure. Recently well designed additional wards have been completed and by the end of this year the present bed strength of 69 is expected to be increased to 86.

In the Second Five Year Plan a provision of Rs. 46·50 lakhs has been made for the nurses' hostel, quarters for staff, the outpatient department etc.

In 1954-55 the budget provision for the Willingdon Hospital and Nursing Home was Rs. 3,95,000. It was increased to Rs. 5,80,200 in 1955-56; and in 1956-57 the budget allocation is Rs. 14 lakhs.

The Safdarjang Hospital is housed in semi-permanent buildings put up during the war. Gradually new permanent structures are being so constructed as not to disturb the routine of the hospital in any way. Three such new structures are the new maternity ward, the paediatric centre and hospital and the orthopaedic centre. The long wards are divided into six-bed wards with plate glass partitions which facilitates easy supervision and partial segregation of cases with varying degrees of infection. This type of layout is now becoming the standard practice in Delhi and all future constructions will conform to this pattern. The Safdarjang Hospital had 179 beds at the time the Central Government took it over. The present bed strength is 326. The number of inpatients and outpatients is shown in the table below:—

	1954	1955	1956
No. of Indoor patients	3,801	5,743	9,170
No. of attendance at O.P.D. (New) . . .	59,182	84,246	1,11,882
No. of attendance at O.P.D. (Old) . . .	68,613	94,344	1,23,980
No. of beds	179	204	326

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To cope with this great increase in the number of people requiring medical attention the number of medical officers was increased from 17 in 1954 to 85 in 1956-57. A similar increase has also been made in the ancillary personnel and specialist staff. In 1954-55 the budget provision was for Rs. 6,80,000. In 1955-56 it increased to Rs. 22,50,000 and for 1956-57 it stands at Rs. 23,85,000.

In the Second Five Year Plan a provision of Rs. 66 lakhs has been made for capital non-recurring expenditure and it is proposed to complete the nurses' 'H' type four-storeyed hostel block during the plan period.

The Home Guard and the Border Patrol

If the various schemes projected by the Health Ministry for the promotion of health and hygiene are to succeed, public cooperation is essential. The Health Survey and Development Committee of the Government of India laid great stress on getting the people to understand the causes that lead to poor health and on educating them in methods of avoiding it. At the time the committee reported, neither the Ministry of Health nor its attached offices had any agency for securing public cooperation in the maintenance of a healthy and sanitary environment by observing the principles of healthy living. The committee recommended the establishment of properly constituted health publicity bureaux as parts of the Central or provincial health departments. The functions of these bureaux, the committee stated, should include participation in the active promotion of education among all sections of the population and in giving suitable advice and help to provincial health departments in the organisation of 'health propaganda' activities in their own territories. An important duty of this organisation, they suggested, should be the publication of an Indian health journal. In order to conduct this "highly specialised task", they recommended that this work should be entrusted to "trained and specialised workers".

Prior to 1947, dissemination of health information was being carried out on a very limited scale, by an Officer on

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Special Duty with only an artist and a clerk to assist him. This Publicity Section was strengthened in 1951 by appointing another Officer on Special Duty and a plan to develop health education work in the country was formulated.

The Planning Commission in their First Five Year Plan stated that "all progress in public health depends ultimately on the willing assent and cooperation of the people and their active participation in measures intended for individual and community health protection". The Commission also stressed the importance of reaching effectively all sections of the public and more particularly women and children. This part of the task could be accomplished through the agency of women doctors, health visitors, midwives, dais, etc. The inculcation of health habits among school children was considered to be vital and the Commission suggested the provision of basic hygienic facilities in school premises and the inclusion of health education as a subject in the teachers' training institutions. The adult population was to be reached by propaganda carried out in their places of work or of recreation or in their homes.

This matter was taken up by the Council of Health at their second meeting in 1954 and the agenda included an item dealing with the establishment of the Central Health Education Bureau and the promotion of health publicity in the States. Their resolutions led to the expansion of the existing health publicity section in the Directorate General of Health Services into a "Central Health Education Bureau" which was sanctioned in October 1955 and has been functioning efficiently ever since.

The Planning Commission has provided Rs. 56.53 lakhs for the development of health education in the States

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during the Second Plan period. This assistance is to be backed by further support from international agencies like W.H.O., T.C.M. etc. The Central Health Education Bureau provides technical assistance to the State health directorates and evolves suitable schemes for health education activity in each State.

In the Second Five Year Plan period, health education work is thus being intensified in order to stimulate people to utilise to the full the medical and public health facilities provided under the plan and to help them to change such attitudes and practices as are conducive to ill-health.

Health education activities, as undertaken during the Second Five Year Plan are in consonance with modern trends in health education which was till lately carried on as a part of publicity and propaganda work undertaken by official health organisations and voluntary agencies. It is only recently that important aspects of health education like group dynamics, human relationship, community organisation, leadership detection and training, utilisation of local cultural patterns and value systems, etc. are being realised. Attempts have been made by the development departments to take note of these ethnological and other factors and to utilise them effectively for promoting social welfare programmes. It is one of the main functions of the Central Health Education Bureau to institute studies and research work in this field in different parts of the country and find ways and means for conducting public health programmes suited to local needs, resources and talent.

Health education is a relatively specialised subject requiring a combined and cooperative effort of scientists in the field of curative, preventive and social medicine, psychology, sociology, education, anthropology, etc. The

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Bureau has two main divisions, the media and the methods divisions, each being subdivided into several sections. The media division which can be easily grafted on to the old Health Publicity Organisation is planned to be completed first and will start functioning as a full unit by the end of 1957-58. The Bureau will be completely organised by the end of the Second Five Year Plan. An expert from the T.C.M.* is at present working as the Health Education Adviser to the Central Government to give technical advice on the establishment and the working of the Central Health Education Bureau.

Quite a number of States are following suit and are planning to build up health education activity through expanding cells in their health departments.

The Border Patrol

In these days of quick transit, no country is immune from the import of deadly communicable diseases such as plague, typhoid, cholera, yellow fever and such like. The ports of entry in each country are now guarded and doubly guarded against the influx of these by quarantine arrangements which are made under Rules framed under the International Sanitary Convention for aerial and maritime traffic as amended in 1944. These rules were called the Indian Ports Health Rules 1938 and the Indian Aircraft (Public Health) Rules, 1946. The International Sanitary Convention has now been replaced by the International Sanitary Regulations which were adopted by the World Health Assembly in 1951. They became applicable to India in March 1953 and the revised rules issued under these Regulations viz. the Indian Aircraft (Public Health) Rules,

*Technical Cooperation Mission from the U.S.A.

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1954 and the Indian Ports Health Rules, 1955, came into force on the 17th October 1955 and 27th February, 1956 respectively. International quarantine requires that each country should take effective measures to see that travellers from and to other countries by ship or aircraft do not carry into or out of the country any infectious or communicable diseases and in particular the six quarantine diseases, viz. plague, cholera, smallpox, yellow fever, typhus and relapsing fever.

In India, all the quarantinable diseases are present to a greater or lesser degree with the exception of yellow fever. Consequently the Government of India have concentrated attention on taking strict precautions against the entry of yellow fever infection into India. Persons arriving in India by air or by sea from a yellow-fever infected area who are not in possession of international certificates of vaccination against yellow fever, are detained in quarantine till such time as they cease to be a source of risk. For this purpose isolation arrangements have been provided at the various airports. Health organisations have been established at all major sea and air-ports in India to exercise the necessary vigilance and control over international traffic and to ensure the application of the International Sanitary Regulations, Indian Port Health Rules and the Indian Aircraft (Public Health) Rules.

Health organisations directly under Central control are functioning at present at the ports of Bombay, Calcutta, Madras, Cochin and Visakhapatnam and the Airports of Santa Cruz (Bombay), Dum Dum (Calcutta), Palam (Delhi), Madras and Tiruchirapalli. To attend to the work

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of health clearance of casual international traffic, facilities have also been provided at the airports of Ahmedabad, Poona, Amritsar, Gaya, Begumpet, Lucknow and at the port of Kandla.

The procedures adopted are both simple and effective. A list of all places in India, against which foreign countries have imposed quarantine restrictions on account of any of the quarantinable diseases, is maintained and notified every week. Information regarding the imposition of such restrictions is received from the Director, E. I. Station, World Health Organisation, Singapore, and is given wide publicity in the press for the information and guidance of the general public. Due publicity is also given to international health requirements for passengers going abroad.

India's obligations under the International Sanitary Regulations require the strict observance of certain minimum standards for keeping major ports and airports free from rats and mosquitoes. Effective anti-mosquito and anti-rodent measures are taken at Calcutta and Bombay Airports. Anti-mosquito work has also been taken in hand at Tiruchirapalli Airport. As Palam (Delhi) Airport is under the administrative control of the Indian Air Force authorities, the work involving anti-mosquito and anti-rodent operations at this airport have been entrusted to them. Hitherto the practice at major ports has been that various Port Trust or Port Administrative authorities have been responsible for anti-mosquito and anti-rodent measures. The Central Government are however gradually taking over the functions from these local authorities at all the major ports. The anti-mosquito measures at Calcutta have also been taken over by the health organisation at that Port. The Port Health Organisations at Cochin and Kandla are also to take over the task of carrying out these measures.

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The Central Government also deals with all questions relating to the health arrangements on pilgrim ships and the observance of health requirements by Haj pilgrims in order to save them from any inconvenience on their arrival in Saudi Arabia. Reports regarding health conditions of outgoing and incoming pilgrim ships are forwarded to the Ministry of External Affairs with whom a close liaison is maintained on all health questions pertaining to pilgrim traffic.

Consequent upon the partition of the country the Karachi airport fell within the jurisdiction of Pakistan and India was left with no airport of direct entry for aircraft from the West. To fill the gap, the airport at Santacruz (Bombay) was declared in October, 1947 as the first airport of entry into India from the West. An emergency isolation hospital was also set up at the airport. Since then the airport has made rapid progress and is at present one of the most important international airports. A modern Yellow Fever Isolation Hospital was constructed at this airport in 1955 under the First Five Year Plan. For traffic from East, a small temporary isolation hospital at Dum Dum (Calcutta) Airport was established at the end of 1947. The Health organisation at this airport has considerably expanded since then and at present it is India's second most important airport. A permanent Yellow Fever Isolation Hospital constructed under the First Five Year Plan has been functioning there since 1955. Similar Isolation Hospitals for the segregation of yellow fever 'suspects' have also been constructed at the Madras and Tiruchirapalli airports. Kandla in Kutch on the West Coast, which was developed long after partition, was declared a major port in 1955. Health clearance arrangements at this port were entrusted to the Port Medical Officer, Kandla. A full time organisation on a regular basis is functioning at this port from February 1, 1957 under a Port Health Officer.

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Note:—The growth of traffic with which the different ports and airports had to contend was phenomenal. In this connection the statistics for the Bombay airport make interesting reading.

Annual statistics of the Bombay Airport Health Organisation in respect of its traffic.

QUARANTINE SECTION						
Year	No. of Aircraft		No. of Passengers and Crew		No. of persons quarantined	
	Incoming	Outgoing	Incoming	Outgoing		
1948	423	545	10200	13175	52	
1949	788	525	22198	17983	78	
1950	893	874	21960	26812	26	
1951	938	609	27835	28437	33	
1952	1107	980	30563	29908	129	
1953	1314	1081	36524	34126	37	
1954	1527	1292	30205	43429	32	
1955	1026	1239	38686	45483	49	

Indigenous Systems of Medicine

The ancient systems of medicine, both Ayurvedic* and Unani†, flourished in the country upto the beginning of the 19th century. With the establishment of British rule in India, modern medicine was introduced, with the result that the indigenous systems receded into the background and State patronage to them became sporadic. It is, however, to the credit of the practitioners of these systems that they survived and naturally, for the greater part, in rural areas. Neglected and discouraged for centuries, the systems had not developed with the march of time. It is only recently that concentrated attempts have been made to extend adequate State patronage to these systems.

The Government of India appointed a Committee under the Chairmanship of Col. Ramnath Chopra to examine the question of the development of Ayurveda in all its aspects. The matters which had come up for specific consideration were (1) the precise steps which should be taken to foster the development of Ayurveda (2) what should be done for the training of Ayurvedic physicians and (3) how could their services be utilised in the country's health programmes.

The Committee in its report submitted in 1948, recommended the establishment of special research institutions with the following aims (i) "to clear these systems

*Relating to Ayurveda, the ancient Hindu system of medicine and surgery.

†Literally Greek ; a system of medicine introduced into India by Arab traders and Muslim invaders and rulers.

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(the ancient systems of medicine) of accretions of centuries of doubtful value; and (ii) to give scientific meaning and significance to the fundamentals of these systems so that they may be accepted by science". The Committee was emphatic however in recommending the adoption of modern scientific methods in all that pertained to the development of the indigenous systems of medicine.

The Government of India is responsible for the formulation of an All-India policy in regard to health, and it was therefore in the fitness of things that this important matter should be discussed by the Central Cabinet when far reaching decisions were taken on this subject. These decisions lay down the aims and objects and the policy to be followed in respect of the development of the indigenous systems of medicine and are of sufficient importance to warrant *verbatim* reproduction.

1. The Central and Provincial Governments should decide that modern scientific medicine should continue to be the basis of development of the national health services in the country.
2. Facilities for research on scientific lines in the Ayurvedic and Unani systems of medicine should be promoted on as broad a basis as possible on the lines recommended in paragraph 251 of Vol. I of the Chopra Committee's report. The results of such research as are of proved value will not only enrich the Ayurvedic and Unani Systems but will also be incorporated in modern medicine so that eventually there will emerge only one system of medicine. A start should be made by establishing at least one centre of research for this purpose. In order to work out the details of its development, a small

committee consisting of suitable persons representing the Ayurvedic and Unani systems of medicine, modern medicine and natural and biological medicine, should be appointed.

3. Pending the results of research and the ultimate evolution of a unified system of medicine as contemplated in the previous sub-paragraph, the question of the nature and content of the training that should be provided for those who wish to practice Ayurveda or the Unani system requires careful consideration. At present the Ayurvedic and Unani systems are taught in institutions of widely differing standards and even the best of them do not provide an adequate grounding in the basic sciences essential for the practice of any system of medicine. It is, therefore, proposed that a full time course of education in modern scientific medicine should be the basis on which special training in Ayurvedic, Unani and other systems should be engrafted for those who want to specialise in those systems of medicine. Such special training in Ayurvedic, Unani and other systems can perhaps be incorporated during the last year or so in the undergraduate medical courses in modern colleges for the benefit of those who desire to qualify themselves in those systems or alternatively Ayurvedic and Unani systems can form the subjects of post-graduate study. This question of the curriculum of studies for those who wish to practice Ayurveda and Unani should also be examined by the Committee suggested under the previous sub-paragraph. On the basis of the recommendations of the

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Committee a uniform policy can be prescribed.

4. All-India legislation should be enacted for the registration of people who have been practising Ayurvedic, Unani and other systems of medicine for a specified number of years and the practice of medicine by unregistered persons should, thereafter, be prohibited.
5. Existing practitioners of Ayurvedic, Unani and other systems, who have had a basic training in the principles of modern scientific medicine, may be given such further training in public health work as may be necessary and utilized by the provincial Governments in the expansion of the health services to the extent necessary.

To give this decision practical shape, a committee was appointed under the Chairmanship of Dr. C. G. Pandit to work out a detailed scheme for the development of the Ayurvedic and Unani systems of medicine, and to suggest ways and means of imparting instructions in these subjects in colleges of modern medicine as well as in those where both the indigenous and modern systems were taught. The committee recommended that a research centre should be established at Jamnagar where the Maharani Gulab Kunverba Ayurvedic Society was already doing pioneer work.

In regard to instruction in Ayurveda in colleges teaching modern medicine, the Committee was of the opinion that the best way to achieve this would be to implement, in the first instance, the recommendations made by the Bhore Committee, namely, the institution of a Chair of the History of Medicine in Universities. The

Committee suggested that students of modern medicine should also be admitted to the Research Centre in Jamnagar for further studies in the indigenous systems of medicine.

Accordingly, the Government of India established a Central Institute of Research in Indigenous Systems of Medicine in association with the Gulab Kunverba Ayurvedic Society at Jamnagar. This Institute which started functioning in 1953, has a dual function to perform, firstly to promote research into the indigenous systems of medicine in such a manner that the best in them can be brought to light and "which could be utilised for the benefit of humanity as a whole and without any reservation" and secondly, to provide necessary facilities for the training of workers in methods of research in them. It must be patent by now that the indigenous systems of medicine were not to be encouraged just for the sake of encouragement or from a narrow nationalistic standpoint: but efforts were to be made to pick out the best in the system, through research, by bringing them up-to-date and after putting them on a scientific basis in order to give to the world our own contribution to medical science.

The Committees appointed by the Central and State Governments similarly urged that facilities should be provided in the country for systematic post-graduate training in Ayurveda. The Pandit Committee in particular recommended that a post-graduate training course should be organised in association with the Jamnagar Research Centre. Accordingly, the Government of India, in collaboration with the Government of Saurashtra, established a post-graduate training centre at Jamnagar. Twenty-five students are taken for training and admission is open to both vaidyas* and graduates of modern medicine,

*A practitioner of the Ayurvedic System of medicine.

the training, however, being entirely along Ayurvedic lines. The students take an active part in their research programmes and facilities are provided for them to qualify for higher degrees in Ayurveda. This teaching-cum-research institution has a dual role to play. One is to place Ayurveda on a scientific footing and the other to produce, in course of time, a band of highly trained personnel who will help to raise the standard of instruction in the existing Ayurvedic institutions in the country.

One of the Committee's recommendations stressed the inadvisability of "compartmentalising" research and in consequence different investigations are to be canalised through clinical research. Literary research was necessary for helping the collection, collation, revision, translation and critical appraisal of all available printed texts or manuscripts dealing with Ayurveda. This, it was felt, would be of great assistance in evaluating the practical achievements of the various systems of treatment advocated in Ayurveda. Clinical research in turn would pave the way for pharmacological research. Research in dietetics on which much Ayurvedic treatment is based and on which modern medical science is placing increasing reliance was an integral part of the recommendations of the Committee.

In view of this, the institute at Jamnagar now has teams of physicians both of Ayurvedic persuasion and of modern medical science who work in close cooperation. Patients are admitted to the hospital attached to the centre and treated in accordance with Ayurvedic principles. The team of doctors of modern medicine also carries out an independent examination of the cases and arrives at its conclusions and assesses the results, using

laboratory tests wherever required. These completed studies on particular diseases are analysed statistically for a critical examination.

Post-graduate teaching is one of the fundamental objects of the institute and the training imparted is now to be recognised as a satisfying part of the requirements of postgraduate qualifications in Indian Universities. The Jamnagar Institute is to keep in close touch with other institutes of indigenous systems of medicines in India, as well as with modern medical institutions, a step which will go a long way to advance the cause of Ayurveda and to standardise the patterns both of teaching and treatment. In close cooperation with the Central Drugs Research Institute at Lucknow, the Jamnagar Institute will also try to develop Ayurvedic preparations on scientific lines.

The Institute has at present a well-equipped, well-staffed forty-bed hospital in charge of a team of Ayurvedic doctors. This team consists of three senior physicians including the Director of the Institute, a darshanika*, a rasa shastrajna** with an Ayurvedic physician and a house physician to assist them. Apart from this, the section dealing with the Siddha System† will be represented by a senior physician, a junior physician and a house-physician. A third team comprises a physician, a pathologist and a biochemist trained in modern medicine. Each team makes its own observations independently of the other two.

The other sections of the institute deal with pharmacy and pharmacognosy which latter is concerned with the proper identification and scientific study of herbal and

*One versed in logic and philosophy.

**An expert in the science of drugs.

† A branch of the Ayurvedic System as practised in South India.

INDIGENOUS SYSTEMS OF MEDICINE

other medicines prescribed in Ayurveda. There is also an outpatients' department which is becoming increasingly popular. The outpatient department of a medical institution is the yardstick by which its success is usually judged, and, as a corollary, the greater the variety of clinical material available for treatment and study, the better are the chances of greater service to the community. The daily average outpatient attendance rose from 35 in November 1953 to 465 in March 1955 which in fact more than testifies to the increasing confidence of the public in the Jamnagar Institute.

The Scientific Advisory Council had decided that the institute should in the beginning concentrate on the study of pandu-roga (anaemia) and allied diseases, of the diseases of the *Grahani*, and *Kamala* group comprising disorders of digestive and assimilative systems, and of jaundice. The diseases that have been studied at the institute during the last few years are 20 in number where symptoms of pandu-roga or of its complications were present. The team of modern physicians simultaneously examined, from their own standpoint and by their own standards, all cases of pandu that were admitted to the hospital. Haematological and other laboratory investigations including gastric analysis were made to establish the diagnosis. The amount of work done can well be appreciated from the figure of 9,000 for laboratory examinations carried out. Of these 6,000 were in respect of hospitalised cases, 3,000 of outpatients.

The department of pharmacognosy of the institute is engaged in carrying out the identification of medicinal plants and crude drugs, including powdered drugs and 'churnas'; investigation of the morphological features of crude drugs both by gross inspection and by microscopic

HEALTH IN INDEPENDENT INDIA

studies; study of crude drugs with regard to their potency; purity and freedom from admixture of adulterants; cultivation of important medicinal plants; and the collection, preparation and classification of medicinal plants and crude drugs for the herbarium and museum of the institute. Up-to-date more than 500 specimens of crude drugs have been studied in this department.

A provision of Rs. 50.50 lakhs has been made in the Second Five Year Plan, for the development of the Ayurvedic system of medicine in India. The proposed allocations are as follows:—

	Rs.
(1) Central Institute of Research in Indigenous Systems of Medicine, Jamnagar	30.0 lakhs.
(2) Grants to 4 centres of 20 beds each for Research @ Rs. 2000/- per bed	8.0 lakhs.
(3) Other research schemes to be approved	5.0 lakhs.
(4) Cost of equipment for upgrading 4 Ayurvedic Institutions	7.50 lakhs.
TOTAL	50.50 lakhs.

A provision of Rs. 11.50 lakhs has been made for this purpose in the current year's budget.

As recommended by the Advisory Committee on Ayurveda a number of grants-in-aid have been made by the Government of India for research in the Ayurvedic system of medicine under the First and Second Five Year Plans.

As regards the Unani system of Medicine, a grant-in-aid of Rs. 75,000/- was made to the Tibbiya College, Muslim University, Aligarh for research purposes during the First Five Year Plan.

INDIGENOUS SYSTEMS OF MEDICINE

Under the Second Five Year Plan a provision of Rs. 5.00 lakhs has been made for the Unani and the Nature-Cure systems of medicine. A sum of Rs. 1.40 lakhs was provided in the budget estimates for 1956-57 out of which a grant-in-aid of Rs. 15,000/- has been paid to the Tibbiya College, Aligarh, to enable the college to continue its research programme. A provision of Rs. 1.35 lakhs has been included in the budget estimates for 1957-58. An Advisory Committee on the Unani Systems of medicine has been appointed with the specific purpose of assessing research work carried out or proposed to be carried out on this system.

The Homoeopathic system of medicine has also come in for considerable attention from the Government who have helped the cause of homoeopathy to a great extent by up-grading one under-graduate college in Calcutta and by rendering financial assistance to an institution in Bombay for post-graduate studies. There is also another aspect to this problem. The standards of homoeopathy in our country vary greatly. While some practising homoeopaths are well trained and equipped with a scientific knowledge of the subject, there are many others whose knowledge of homoeopathy has been acquired by the mere reading of literature relating to this system or by taking correspondence courses for a few weeks. It has been the aim and intention of the Health Ministry of the Union Government to try to abolish quackery in any system of medicine. It can hardly be gainsaid that such quackery does exist in India and that too to an alarming extent. Some standardisation in minimum basic qualifications becomes necessary if any system is to be accorded recognition by the State. An Advisory Committee of Homoeopaths has, therefore, been set up to ensure a high standard of qualification in

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homoeopathy. The Committee has drawn up curriculae for future studies in this system of medicine and the Government of India have approved of a 5-year degree course in homoeopathy. Boards for the regulation of this system have also been established in several States.

THE MINISTRY AND
THE METROPOLIS

The City's Water Supply and Sanitation

The functions of the Central Ministry of Health are normally coordinative and advisory. In the matter of urban and rural water supply and sanitation schemes in the States, the Central Government not only exercises these functions but also provides resources to the States by way of grants-in-aid and repayable loans. In the New Delhi and Delhi areas and in the suburbs, however, the Ministry of Health at the Centre, since the abolition of the Delhi State, functions as a directive authority in most of the civic matters such as the water supply and sanitation of the urban areas of Delhi, the planning and development of Greater Delhi, and the clearance of slums.

Normally in a big city like Delhi, the municipal authorities in charge should be responsible for the entire water-supply problem as well as of sanitation. In Delhi and New Delhi, the responsibility of maintaining a filtered water supply system and a sewage system devolves on the Delhi Joint Water and Sewage Board which was constituted in 1926 by an Act of the Central Government. The Board which consists of 9 members, has the Chief Commissioner of Delhi as its Chairman and provides the bulk supply of filtered water and carries out the bulk disposal of sewage and sullage. The Board's plants take raw water from the Yamuna, treat it and pump the filtered water to storage tanks from which the individual municipalities take over the distribution to the consumer.

HEALTH IN INDEPENDENT INDIA

In the case of sewage, the municipalities feed the sewage and sullage into the trunk mains of the Delhi Joint Water and Sewage Board. From these trunk mains the sewage goes to the Board's treatment plant for further disposal.

Till 1947, the Board had more or less an uneventful working existence, able to anticipate the slow growth of the City's population and to make arrangements to meet the increased requirements of a filtered water supply. But 1947 and the independent status of the new India threw the Board's activities out of gear; for, from this year onwards, Delhi and New Delhi continued to attain greater and greater importance. This was due to three factors, the expansion in India's external relations which led to the establishment of Embassies, Ministries and Legations in Delhi by foreign countries; the expansion in Delhi's population partly due to expanded governmental activity and partly due to the influx of refugees; and a certain expansion in the city's manufacturing and trade activities. The combined effect of these was a phenomenal growth in the City's population with the resultant increase in demand for essential services like water supply and sanitation, housing, electricity, policing and so on.

The magnitude of the problem can be gauged from figures denoting the increase in the population of Delhi which rose from 10·6 lakhs in 1947 to 18 lakhs in 1956. This growth of the population has naturally resulted in a greater demand for both water supply and sanitation. Prior to 1947 the requirement of filtered water supply was met by the provision of 28 million gallons per day

THE CITY'S WATER SUPPLY AND SANITATION

and a maximum capacity of 56 millions could provide by 1952, forty gallons of water per head to 14 lakhs of people. The increase in the population however outstripped the increased capacity of the plant. As a result the present plant capacity of 62 mgd which would have been adequate to cover the normal requirement of the population in the Capital City has had to be stepped up to 90 mgd which would provide 50 gallons per person per day to 18 lakhs of people living in Delhi and Greater Delhi.

To cope with the demand for a filtered water supply, steps have been taken by the Delhi Joint Water & Sewage Board. The works taken in hand include—

- (a) those necessary to augment the present water-supply from 60 million gallons to 90 million gallons, from raw water pumping to filtration and pumping through the mains to the reservoirs;
- (b) those necessary to increase the capacity of storage tanks from an 8 hour supply to a 12 hour supply;
- (c) those necessary to stabilise the present supply at the intake wells of the Wazirabad pumping station by ensuring that the main stream of the river swings to the right bank, and to the deep end channel on the right side;
- (d) those necessary to augment the supply at Wazirabad in summer months when the flow in the river is depleted;
- (e) those required to ensure that the sewage and sullage of the urban area of Greater Delhi is

HEALTH IN INDEPENDENT INDIA

properly treated and disposed of in such a way that it does not contaminate the upper reaches of the river which is the principal source of water supply.

On the sewage treatment side, the town is divided into three zones. The eastern zone near Okhla has a sewage treatment plant. The capacity of this plant which is one of the most modern plants in the East has been augmented from 18 to 36 mgd.

A 20 mgd primary sewage treatment plant is under installation at the Coronation Pillar for catering to the northern areas of Delhi. This will treat the sewage and sullage from the Najafgarh drain and will cater to underground sewage of the northern localities when the area is fully developed.

The third zone is to be served by an independent plant of 12 mgd. capacity which is being installed at Keshopur near Tilaknagar, to take care of sewage from Patel Nagar, Rajendra Nagar and all the new colonies on Najafgarh Road. The trunk sewer on the Najafgarh Road will intercept the sewage from all the colonies.

The laying of a trunk sewer from Delhi Gate along the Ring Road has also been taken up. The sewage from Delhi municipal areas will be conveyed by the sewer to Ring Road near Kilokri for being pumped on to Okhla. The capacity of the present sewage treatment plant is to be augmented further by 30 mgd. The conduits for carrying this additional sewage have already been constructed.

Along with the works carried out by the Delhi Joint Water and Sewage Board, a number of works are to be carried out by the municipal authorities of Delhi,

THE CITY'S WATER SUPPLY AND SANITATION

namely, watermains in the various developed localities to carry the sewage into the trunk mains of the Delhi Joint Water and Sewage Board.

A new Municipal Corporation is being constituted to look after all the civic responsibilities of Delhi and Greater Delhi. The specific functions of looking after the water supply and sewage disposal will then be entrusted to a Standing Committee of the Corporation designated the Water Supply and Sewage Sub-Committee.

Regulating the City's Expansion

An expanding population means an expanding city with all its concomitant requirements such as more housing, more school, shopping, hospital and other accommodation, more roads, lighting, water supply and so on. The demand for these calls for considerable building activity which, if left unplanned and unregulated, is likely to create more problems than it can solve. To prevent such an eventuality the Government have established two important statutory bodies empowered to deal with town expansion, and housing and ancillary schemes. They are the Delhi Improvement Trust and the Delhi Development (Provisional) Authority.

The Delhi Improvement Trust, which functions under the U.P. Town Improvement Act as extended to Delhi, is a statutory body set up in 1937. The formation of this Trust brought under one single authority all the functions governing Delhi's expansion schemes. The Trust holds and manages the land transferred to them by the Government and called the Nazul Estate. It has powers under the Land Acquisition Act to acquire, where necessary, land required for the execution of its various schemes. The Delhi Improvement Trust does not get any grant from the Government, a large part of its income accrues from the sale of land. The Government of India, however, gives loans to the Trust for specific projects. The organisation has subsidised housing schemes and the shortage caused by the difference in the economic rent and the rent realised from the tenants under these schemes is met by the Trust.

REGULATING THE CITY'S EXPANSION

While by the end of March 1953, the Trust had completed 20 out of the 40 schemes in hand, the increased tempo of work had resulted in the number of completed subsidised houses reaching the figure of 943 by the end of March 1955. In 1955-56 another 108 houses had been completed and work on 450 had been taken in hand. To cater to the evictees under the Jamuna Bazar slum area clearance scheme, Government have sanctioned a loan of Rs. 50 lakhs for the construction of 1,590 subsidised houses of which 400 are to be at Kilokri and the rest at Jhilmila-Tahirpur. The re-housing programme for the year 1955-56 includes 60 houses in Regharpura and 48 in Moti Nagar. Schemes under the consideration of the Government relate to the construction of 636 houses, 420 of which are to be in Jungpura Extension Scheme and 216 in the Amrit Kaur Basti in the Western Extension Area. Besides these, there were 14 town expansion schemes which the Delhi Improvement Trust had in hand in addition to the 47 schemes mentioned earlier. These covered an area of 31,371.2 acres bordering on the suburban areas.

The Delhi Development (Provisional) Authority is a body which came into being as a result of the recommendations of a committee appointed in April 1950, under the Chairmanship of Shri G. D. Birla, to review the working of the Delhi Improvement Trust. The committee submitted an 'interim' report in 1950 in which they made certain recommendations for accelerating the tempo of the Trust's work. Most of these recommendations were accepted and implemented. Subsequently, in April, 1951, the committee submitted its final report containing 42 recommendations, on the basis of which, Government took up the question of setting up a single authority for planning the development of the urban areas of Delhi and for taking over the functions of the different authorities that were dealing

with this question. As the matter involved the question of proper legislation the Delhi Development (Provisional) Authority was constituted as it was expected that it would naturally take time for the bigger body to be established. Meanwhile and because the expansion of Delhi was taking place in a haphazard way and threatening to spoil both the Capital's health and aesthetics, an ordinance entitled the Delhi (Control of Building Operations) Ordinance 1955, was promulgated on the 22nd October 1955, and later enacted into an Act of Parliament, called the Delhi (Control of Building Operations) Act 1955.

The Delhi Development (Provisional) Authority, which has been constituted under the provision of the Act and has been functioning actively, has approved the layouts of 24 private colonies and a number of Government and Rehabilitation colonies round Delhi. The Authority is also scrutinising layouts in respect of certain areas which have been classified by the Authority as "controlled areas" for this purpose. The Authority has entertained for sanction building plans in respect of six private colonies. In other cases, permission for building is to be given only after sanitary and engineering services such as adequate arrangements for water supply and drainage have been approved. The Authority has also scrutinised and sanctioned proposals for siting and constructing individual buildings, public offices, schools, colleges, religious institutions, maternity and child welfare centres, petrol filling service stations, transport depots, sanitary installations, telephone exchanges, radio transmitting stations, electric sub-stations, meteorological buildings, film studios, and others.

There is also a negative aspect of the Authority's work which consists of the active prevention of unauthorised and unregulated construction. Where attempts have been made

REGULATING THE CITY'S EXPANSION

to flout its directions, the Authority has taken stringent action by passing demolition orders and, in some cases, even undertaken the demolition of the buildings under the enabling legislation i.e. Delhi (Control of Building Operation) Act of 1955. The Delhi Development (Provisional) Authority, which was to function only till the 31st of December 1956, has now had its life extended by a year to allow for legislation to be passed for the constitution of the new Municipal Corporation for Delhi.

Simultaneously with this, a Town Planning Organisation was set up for preparing a master-plan for Greater Delhi. This body has since submitted an interim plan for Greater Delhi which has been approved by the Cabinet. The various recommendations contained in the "Interim General Plan" are to be implemented over a period of three years and are likely to cost about Rs. 25 crores.

Other important projects are the acquisition and development of 600 acres of land for the construction of a slaughter house. This project will mean the development of a small township to provide better working and living conditions for all those engaged in this and ancillary trades. Similarly about 400 acres of land are to be acquired for the resettlement of gwalas* and their cattle in another small township consisting of 1,600 cattle sheds, 1,600 tenements and some community centres. The construction of 3,000 houses for evacuated slum dwellers, the improvement in the living conditions of most of the katras† from which the dwellers have not yet been evacuated, and the acquisition of 500 acres of slum property are further steps to be taken in furtherance of the plan.

These steps are expected to ensure proper coordination and produce an integrated scheme for Delhi's expansion

*Cowherd-cum-milkman.

†A multi-tenant tenement house accommodating a large number of families and situated in a crowded locality.

HEALTH IN INDEPENDENT INDIA

projects. More and more it is becoming obvious that all housing schemes are very intimately connected with health and the Health Ministry has naturally played an important part not only in Delhi itself, but also in the country as a whole, by setting up a nucleus for town planning and urban development at the Centre on whose help the States can draw whenever they are in need.

Cleaning the Augean Stables

Every city has its plague spots and Delhi is no exception. Perhaps it has more than its share. This has been due to a sudden increase in the population and also to the large scale influx of displaced persons from Pakistan who largely gravitated to the metropolis in search of succour and livelihood. The slums of Delhi are not only an eye-sore aesthetically but are also a menace to the city's health. There is also the human angle which calls for prompt action in providing living conditions to those who are forced to live in such unhealthy surroundings. Great importance therefore attaches to the clearing of slums in Delhi where some three lakhs people are reported to be living in rickety tenements situated in filthy surroundings.

The importance and the magnitude of the problem has attracted Government attention even at the highest level. The Prime Minister convened a meeting in May 1956 to consider the question of slum clearance in Delhi. Of the decisions taken at the meeting two are important. Under the first one, the Delhi Development (Provisional) Authority was to be put in charge of slum clearance and under the second, all katras under the control of the Custodian of Evacuee Property were to be handed over to the Health Ministry. The clearing of these katras and the rehousing of the erstwhile inhabitants of the slums has unfortunately been fraught with great difficulties.

For one thing, these localities were under the control of various interests and for another the people had got so inured to the conditions under which they were living that it was a problem to persuade them to move. There was also the economic question. The slum dwellers lived close to their places of work and were reluctant to move away even to better surroundings. The landlords of these katras were also a body of vested interests which had to be reckoned with in clearing operations.

If results were to be obtained, Government had to place all slum clearance work under the charge of one single body and to arm it with sufficient authority to enforce its decisions both on the controlling interests and the residents. The Delhi Development (Provisional) Authority were therefore put in charge of the work of slum clearance and were given powers to carry it out in the most effective but humane way possible. There were two ways in which it could be done. One was to demolish the tenements in existing katras and to resettle the inhabitants elsewhere. Where there were difficulties in providing alternative accommodation, basic amenities could be provided to make the existing katras more habitable and sanitary.

To facilitate operations, the Delhi Development (Provisional) Authority in its turn entrusted the work to three organisations viz, the Delhi Improvement Trust, the Delhi Municipal Committee and the Bharat Sevak Samaj*. Since then the Delhi Municipal Committee has handled 100 katras and provided amenities for 2,555 families, the Improvement Trust has carried out improvements in 66 katras whereby 1,800 families have benefited while the Bharat Sevak Samaj has provided basic amenities for 1,038 families in 15 katras. The total expenditure

*Literally Servants of Bharat (India) Society. An all-India body of voluntary workers.

CLEANING THE AUGEAN STABLES

incurred in these operations so far has been about Rs. 7,51,000 resulting in over 27,000 people being provided with better amenities and improved living conditions. Up-to-date, 1,600 houses have been constructed by the Improvement Trust which have been allotted to former residents of slum areas and another 1,600 are now nearing completion. All these new quarters have been provided with drainage, filtered water supply, flush latrines and kitchens. Adequate ventilation has been ensured by keeping the maximum possible areas of open space round these quarters.

In the matter of rentals, adequate consideration has been given to the ability of the tenants to pay and Government have agreed to subsidise the rent to the extent of 50 per cent of the maximum rent that a former slum dweller was expected to pay. The rents have been kept low. The rent for a better type of quarter is Rs. 12 per month, while for a number of other quarters the rent is as little as Rs. 6 per month.

The Improvement Trust has now evolved a scheme for the clearing of slums around the Jama Masjid area by constructing 49 shops and providing suitable residential accommodation for about 89 families. The Delhi Municipal Committee has taken in hand the construction of a temporary market near the Idgah to accommodate junk shops proposed to be removed from the Jama Masjid Area. Near the Western Jamuna Canal area, 144 houses are being constructed for rehousing the evictees from Urdu Park. Surveys are being conducted in four slum areas viz. Jhandewala, Subzimandi, Kotla Mubarakpur and Serai Phoos.

The work is not carried out without reference to the

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peoples representatives. A Slum Advisory Body, with seven Members of Parliament as members, has been appointed to advise the Minister of Health in the matter of slum clearance and the provision of alternative accommodation to those removed from the slum areas. An Advisory Committee has also been set up by the Delhi Development (Provisional) Authority to advise it on the policy and pattern of service to be effected in the slum areas and is meeting regularly.

With a view to confer additional powers on the Government of India, Parliament has enacted "The Slum Areas (Improvement and Clearance) Act 1956" which is applicable to all Union territories with the exception of the Andaman and Nicobar Islands, the Laccadives and the Minicoy and Amindivi Islands. This Act has been brought into force in the Union territory of Delhi with effect from the 8th February 1957. The Act empowers:

- (i) the Competent Authority to require improvement of buildings unfit for human habitation;
- (ii) the Competent Authority to execute works of improvement itself, if not executed by the owner himself and recover the expenses from the owner as arrears of land revenue;
- (iii) the Competent Authority to order demolition of buildings unfit for human habitation;
- (iv) the Competent Authority to declare any slum area as a clearance area and to redevelop the clearance area or any part thereof;
- (v) the Central Government to acquire land and buildings in slum areas on payment of nominal compensation;

CLEANING THE AUGEAN STABLES

- (vi) the Competent Authority to order removal of offensive or dangerous trades from slum areas; and protect tenants in slum areas from eviction by landlords.

These steps are certainly not the *dernier cri* in this field, but they do hold sufficient promise that in the near future the living conditions in Delhi's congested areas will have improved and India's capital city will, in time to come, be able to set an example to the rest of urban India in the provision of civic amenities and better sanitary and living conditions to its residents.

Epilogue

This brings us to the end of the book which describes the beginning of a new era in medical relief and health protection activities of the Government in Independent India. What their achievements have been we leave the public to judge from all that has been set out in the foregoing chapters.

But one thing must be said. Apart from effecting an improvement in the sphere of domestic health, India can also now lay claim to have secured, in the last ten years, an honoured place in the International health world as also in the South-east Asia zone. This has been due to the outstanding contributions made by successive Indian delegation to the W.H.O. and other International bodies, and because of other countries in the East having elected to obtain training for their medical and health personnel from the training facilities provided in India. No doubt, India will go from strength to strength in this work and endeavour to retain this position.

The Ministries of Health at the Centre and in the States have broken fresh ground in the form of many of the schemes and measures designed to promote the health and well-being of the people of India. These pioneer efforts bear eloquent testimony to their solicitude for the coming generations.

No pioneers, however, can ever hope to see in person the results of their labours but their reward lies in the knowledge that they have tried to lay solid foundations for future progress on which their successors can build an edifice worthy of their mother-land.

PROGRESS AT A GLANCE

<i>Item</i>	1948	1952	1956
1. Crude Birth Rate Per Mille .	25.2	24.8	30.2*
2. Infant Mortality Rate Per Mille of live births	130.1	116	108*
3. Death Rate Per Mille	17.0	13.6	12.4*
4. Number of Medical Institutions			
(i) Number of hospitals	..	2,736	3,106*
(ii) Number of dispensaries	6,401	6,762	7,073*
5. Number of beds	80,508	124,419	155,572†
6. Number of Medical Colleges .	29	30	44
7. Number of Medical Graduates turned out every year . .	1,114	1,956	2,995*
8. Number of personnel registered with the different Nursing Councils :			
(i) Nurses	12,981	18,006	24,724†
(ii) Midwives	14,968	20,551	28,030†
(iii) Dais	865	3,749	7,977†
9. Number of persons Tuberculin-tested (in millions) . . .		13.94 (1952-53)	86.08 (1956-57)
10. Number of persons B.C.G. vaccinated (in millions) .		4.12 (1952-53)	30.80 (1956-57)
11. Number of T.B. Clinics .	95	146	174
12. Number of T.B. Demonstration & Training Centres . . .	..	..	3
13. Number of T.B. Hospitals .	14	31	71
14. Number of T.B. Sanatoria .	31	51	69
15. Number of M.C.W. Centres .	1,466	2,072	2,378*
16. Blood collected for transfusion	4,235,040 c.c.		22,600,036 c.c.
17. Incidence of Malaria (in millions of cases) :			
1952-53	1953-54	1954-55	1955-56
75.0	60.7	41.2	19.3

* Provisional.

† For the year 1955.

COMPARATIVE GRAPH ON THE EXPECTATION OF LIFE IN INDIA AND OTHER COUNTRIES

MALES ---- FEMALES ----

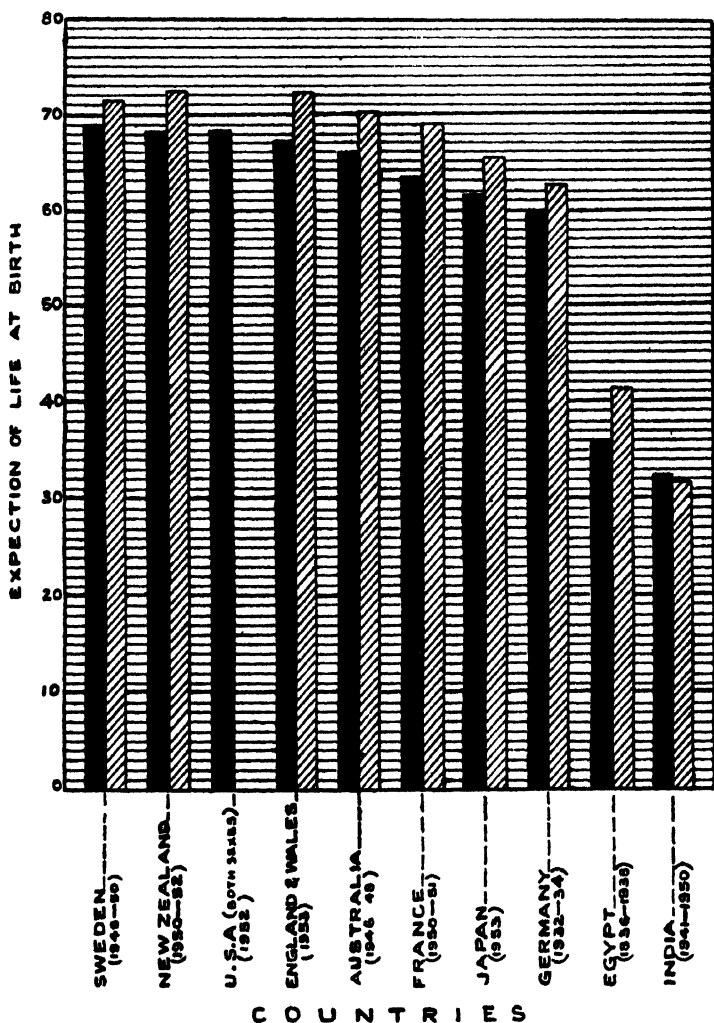
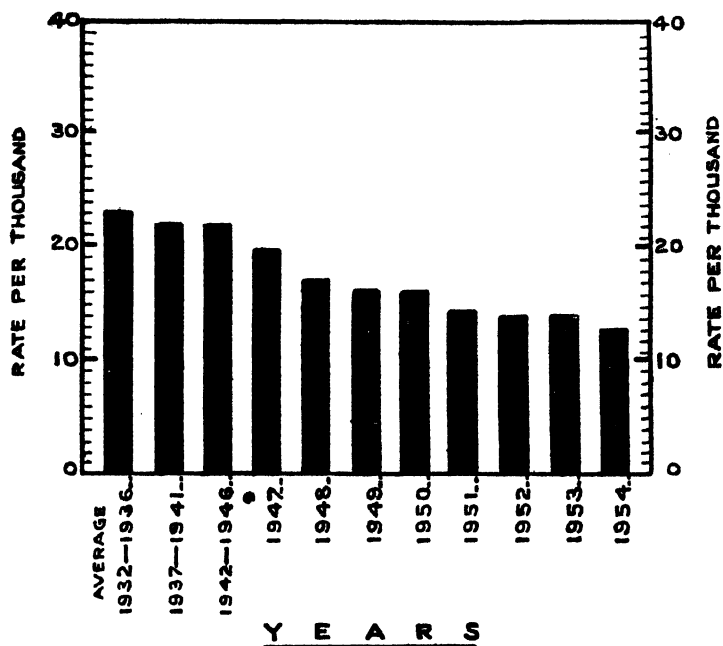


CHART SHOWING THE MORTALITY RATE IN INDIA

(1932-1954)



INFANT MORTALITY RATE IN INDIA (1932-1954)

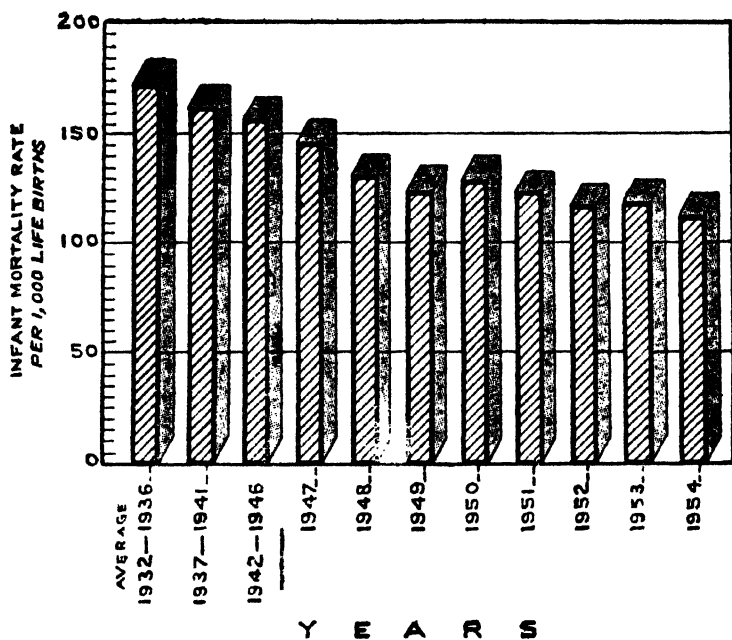
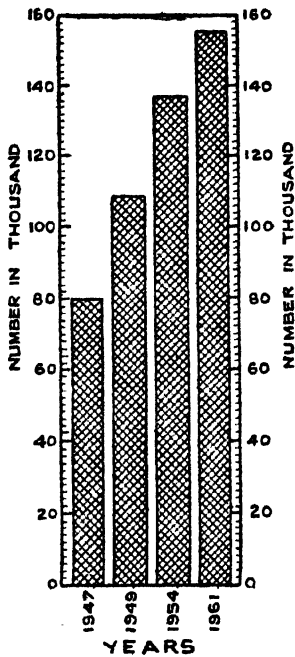
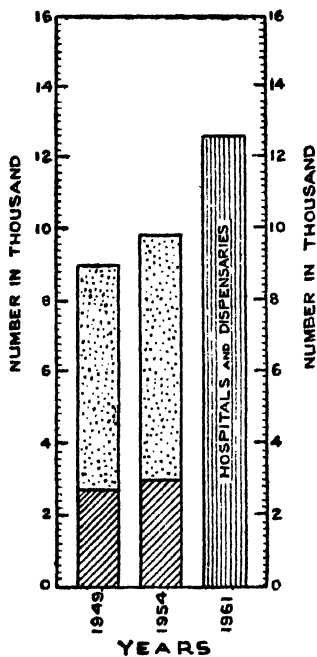


CHART ON THE GROWTH IN THE NUMBER OF MEDICAL INSTITUTIONS, HOSPITALS DISPENSARIES) AND BEDS

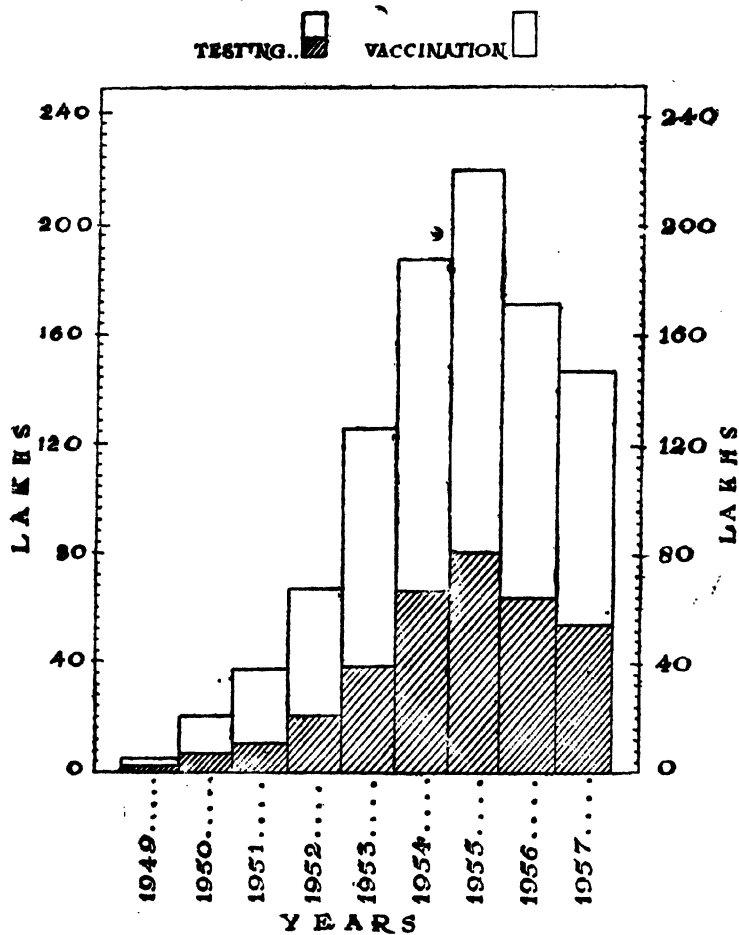
Hospitals

Dispensaries

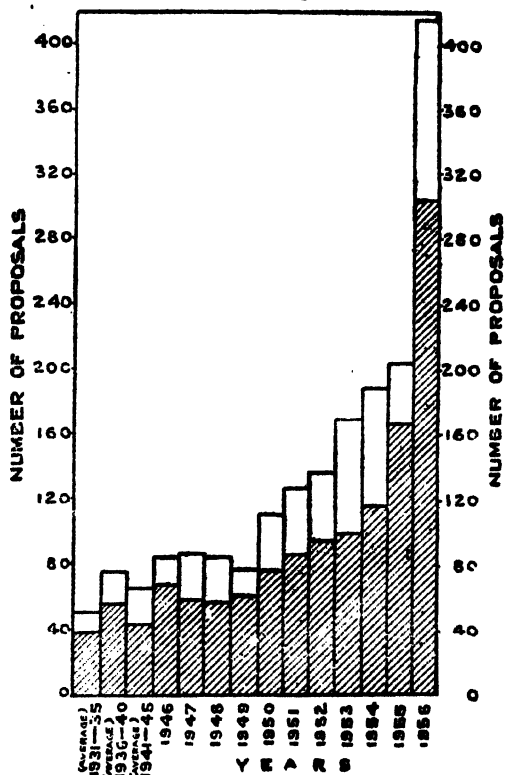
Beds



PROGRESS OF THE TUBERCULOSIS TESTING B.C.G. VACCINATION PROGRAMME IN INDIA



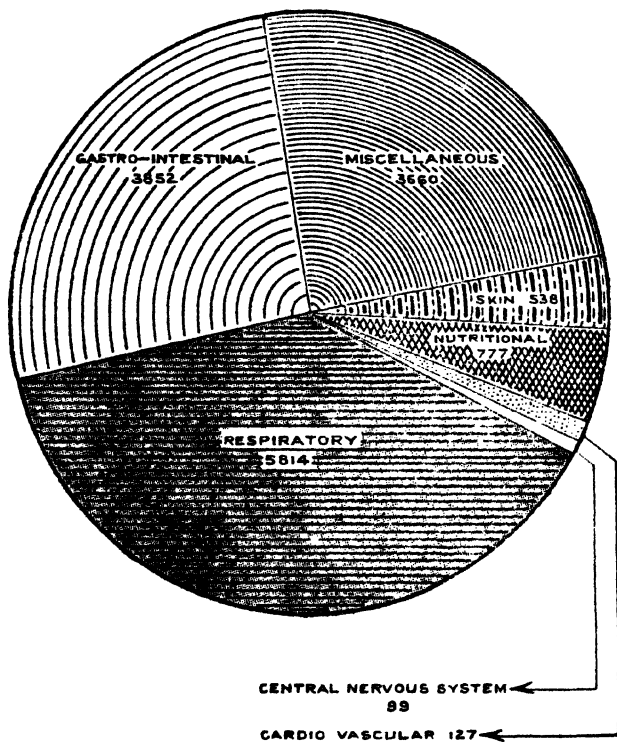
**CHART SHOWING THE NUMBER OF RESEARCH PROPOSALS
RECEIVED AND SANCTIONED FOR GRANT-IN-AID
SINCE-1931**



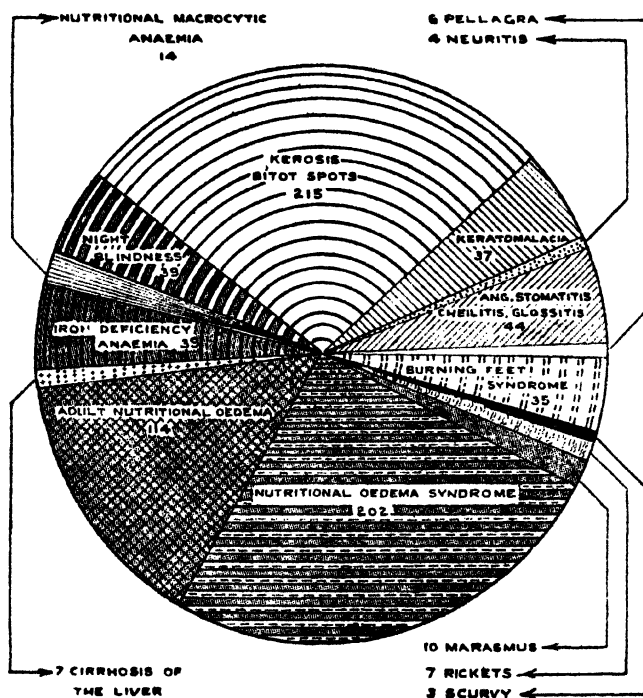
REFERENCES.—

1. Each column represent the total number of proposals received during the period under consideration
2. The shaded columns represent the total number of proposals sanctioned

INCIDENCE OF NUTRITIONAL AND OTHER DISEASES



RELATIVE DISTRIBUTION OF NUTRITIONAL DISORDERS (1949-1953)



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